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THE CRANBERRY

AND ITS CULTURE.

by B. EASTWOOD.

New York.

A

COMPLETE MANUAL

For the Cultivation

OF

THE CRANBERRY,

WITH A DESCRIPTION OF THE BEST VARIETIES.

BY B. EASTWOOD,

"SEPTIMUS," OF THE NEW YORK TRIBUNE

NEW-YORK:

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DEDICATION.

TO THE

HON. HORACE GREELEY,

EDITOR OF THE NEW YORK TRIBUNE, AND THE UNTIRING ADVOCATE OF WHATEVER MAY DEVELOP THE AGRICULTURAL RESOURCES OF THE COUNTRY.

THIS MANUAL IS INSCRIBED BY

THE AUTHOR.

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To the Reader.

EVERY one connected with agricultural pursuits in this country, must be aware that there exists at present considerable anxiety respecting the best modes of cultivating the cranberry. Having been attracted to this subject, I paid particular attention to it, and instituted a series of investigations, with special reference to raising the berry as an article of commerce. In these, I was materially assisted by some of the most successful growers in the country, whose "yards" I visited, and whose experiences I received from their own lips. The results of these investigations I partially embodied in a series of letters which were made public through the columns of the "New York Tribune," and so great was the attention they excited, and so many letters asking for further information were forwarded to me, that I concluded to embody my own experience, and that of others on the subject, in the manual which is now before the reader. In it, any

intelligent farmer will find all the knowledge he can require for raising the cranberry. It only remains for me generally, to thank the many gentlemen who have favored me with their experiences, and to call attention to the valuable letters which are incorporated with this work, and to note the designs by J. R. Dix, Esq., which were made under my own directions from nature, and are accurate in all respects.

JANUARY, 1856.

THE CRANBERRY

CHAPTER I.

NATURAL HISTORY OF THE CRANBERRY

If the traveller over Cape Cod will now and then turn his eye toward the borders of the many ponds which abound in that region, or occasionally examine the margin of swampy tracts, he will frequently perceive patches, as they are technically termed, of a strange-looking, and at first sight, a seemingly stunted vegetation, presenting very different appearances to those exhibited by fields of stately Indian corn; or tracts of farm land, where the tall stalks of the rye wave, and ears of wheat look golden in the sunshine of summer.

A certain preciseness of planting, and regularity of disposition, convinces even the most careless observer, that these patches are by no means unproductive And if he chooses to inquire of the next person he meets, he will learn that these, to him singular-looking specimens of farming, are cranberry grounds.

We have selected Cape Cod as the imaginary field of our illustration, inasmuch as that erroneously supposed exclusively sandy region contains within its boundaries more cranberry yards than any other locality of similar dimensions, that we are aware of The reason why it should be so, is obvious enough. Its mixture of sand and soil, its peculiar climate, its exemption from early frosts,—matters to which, with others relevant to the subject, we shall hereafter refer —are all favorable to the production of cranberries. Indeed, this berry promises to share, with the codfish, a great local popularity.

There are many other parts of this great country where cranberries are grown, but it is confessed on all hands, that Cape Cod takes the lead in this enterprise. Her few growers have achieved a reputation for their fruit, which already commands ready sales, and the best prices. This circumstance has of late drawn attention to the growing of cranberries, as a money-making undertaking; and curiosity having been once excited, it is not likely to be allayed, until growers in other parts of the States spring up, and like their Cape Cod brethren, succeed in making otherwise unproductive tracts of land both fruitful and a source of gain. For there are at this moment thousands of acres of swampy and sandy places, in the great West and in the South, which by a little labor can be converted into

cranberry grounds. The only difficulty experienced by those who are inclined to enter this field of agricultural industry, is the difficulty experienced by every other new enterprise,—the want of knowing how to begin,—and when begun, how to carry it on to a successful issue. Hitherto, no reliable instructions have appeared in print, but in the following pages, the subject will be so fully treated of, in all its bearings, that any intelligent agriculturist will, by following the hints thrown out, and the directions given, find no difficulty whatever in securing decent crops of this increasingly popular berry.

The cranberry has long been known to naturalists as a berry possessing certain properties and peculiarities, although but comparatively few years have elapsed since its use as a culinary fruit has been extensively known. Long years ago, it was used by the Indians, who in their way were extensively acquainted with the products of the soil; they gathered, and roasted the unripe berries and used them as poultices, believing that when applied to the wounds made by poisoned arrows, they had the power of drawing the venom forth. Many a squaw of the Pequods on Cape Cod, if we may credit the statements of some of the early settlers, made a mess of cranberries to give a relish to the venison they killed and cooked; thus anticipating the more elaborate jelly of our own times,

or the cranberry sauce, without which a thanksgiving turkey is now considered shorn of half its glory.

These cranberries, however, were wild, and of an austere flavor, just as the potatoes which Sir Walter Raleigh first discovered and carried with him to England were but the puny progenitors of the large and mealy affairs which now, as Chenangoes, Irish, or under other specific names, appear daily on every table.

It is not positively known from what particular country the cranberry originally came. Most probably, like many other fruits and plants, it is indigenous to many soils. One thing is certain, that in various parts of America, both North and South, it exists in a wild state, in various parts, in great profusion, and it is not unreasonable to suppose, that there are at this moment uncountable acres in this country where it abounds unheeded, and only allowed to run waste because the value of the berries is not known. On many of the vast steppes of Russia wild cranberries abound, and even amid the wastes of Siberia it is occasionally to be met with. Indeed, the Russian cranberries proved for a long time to be no inconsiderable portion of the exports of that country, and even until the breaking out of the Eastern War, there were to be seen among bales of hides, hogsheads of tallow, bundles of bristles, and bales of hemp, certain quaint-looking earthen jars, which contained cranberries for the use

of the lords and ladies of London. And it was only such who could afford to pay the high prices demanded for these Muscovite luxuries. Now that the Crimean War has effectually put a stop to the importation of Russian cranberries, it is but reasonable to suppose that the American article will monopolize the English market.

At the present time, there are but two kinds of cranberries in the market—these are known as the English and American cranberry. Without entering into scientific details, or perplexing the reader with botanical technicalities, we will, as concisely as may be, describe both kinds, and their special peculiarities.

THE ENGLISH CRANBERRY.

(OXYCOCCUS PALUSTRIS.)

This species of cranberry abounds in many of the marshy and fenny districts of England, and in some parts of Ireland. In the latter country, they are scarcely noticed by the peasantry, who seem to devote all their energies to the cultivation of the inevitable potato. There are two counties in the midland, or rather eastern districts of England, which are celebrated for the large extent of marshes and fens they contain. Indeed, many portions of Norfolk and Lincolnshire are mere bogs, or swamps, at certain rainy

seasons; thousands of acres are submerged, the only harvest supplied by them being wild ducks and the like, for the great markets of the principal cities.

In these counties, the wild cranberry is found in great abundance, but it is a peculiarity of the plant, that it never grows among the stagnant water, but wherever found, it always flourishes by the side of the numerous little rills which feed the great fens. From this fact, very useful hints may be taken by the grower of the cultivated vine, as we shall have hereafter occasion to show. The English fruit is scarcely as large as an ordinary green pea, it is of a pale-red color, and having an austere and almost acrid taste. It possesses a bitter principle, on which its peculiar flavor mainly depends, and a small portion of tannin, which renders the raw berry somewhat astringent. This principle, however, and of course its effects, are destroyed in cooking. The English housewife from this berry manufactures marmalade, jelly, jam, and the like, and for puddings and pies are much prized; but in her *cuisne* the delicately flavored cultivated cranberry is not known, excepting indeed her master, on his return from a visit to London, brings with him a bottle of the American cranberries, for which he has paid the not very moderate price of five shillings (or nearly a dollar and a quarter) sterling. This leads us to believe that if our transatlantic parent, John Bull, was to

exercise as much diligence and tact as his son Jonathan has done on this side the ocean, in cultivating the cranberry vines of the fens, he would reap an abundant harvest from lands which are now lying as barren wastes. But while the present war lasts, there is little chance of his going ahead in this particular department of agriculture; and therefore the growers here will doubtless, for a long time to come, find a market in England for the species we will next call the reader's attention to.

THE AMERICAN CRANBERRY.

(OXYCOCCUS MACROCARPUS.)

It is scarcely necessary to say much about a berry, which must be so familiar to almost all, as is the American cranberry. Of course it has the same general properties as the English fruit, but yet there are important differences, as well as resemblances. While the English berry is small, of a pale red, the American one is large, and richly colored; some specimens are as deeply crimsoned as a dark-hued cherry. The leaves, blossom, and fruit of the latter also, are much larger, and the flavor greatly superior; by some the reverse has been asserted, but from experience, and practical knowledge, we can testify to the superiority of the American cranberry over all others that we have ever met with.

The American cranberry, is divided by growers and dealers into three great varieties. These are,

1. THE BELL CRANBERRY.

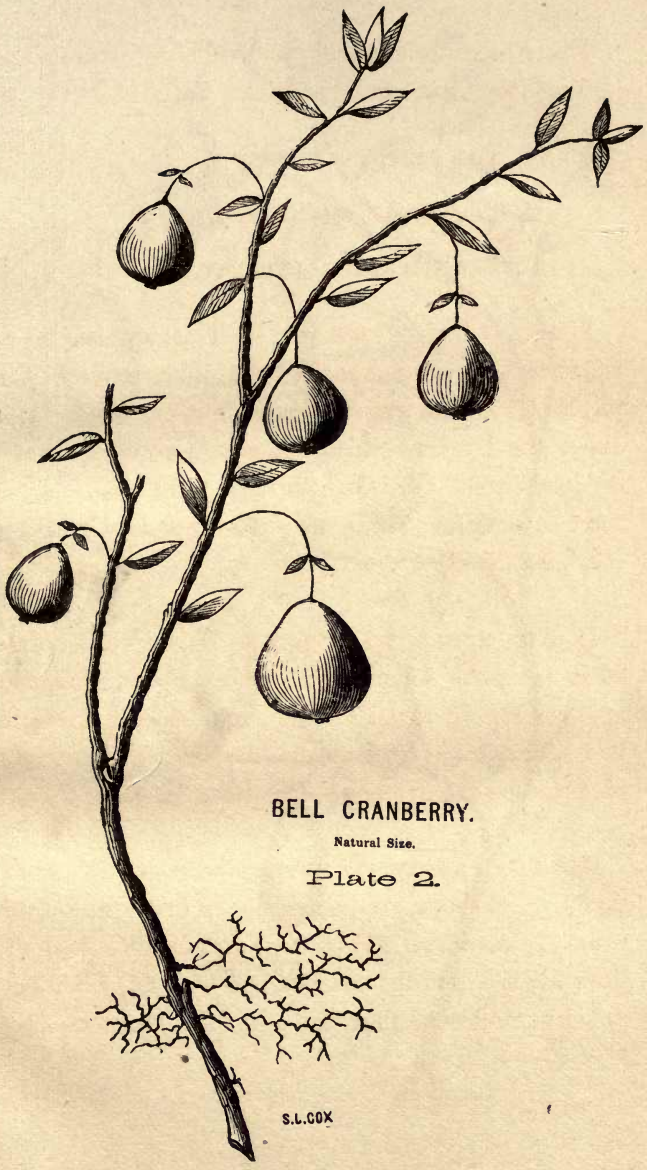
2. THE BUGLE CRANBERRY.

3. THE CHERRY CRANBERRY.

I. THE BELL CRANBERRY. — This species is so called because of some fancied resemblance to a bell in its shape. Of this variety there is but one kind. It is about the largest species, and almost as dark colored as blood coral. Of its comparative yield, as well as of those of the other kinds, we shall by-and-by speak.—(*See plate No.* 2).

II. THE BUGLE CRANBERRY. — This species somewhat resembles a bugle bead, it being elongated, and approaching an oval. Of the bugle species there are two kinds, large and small—the large is generally preferred by the growers.—(*See plate No.* 3).

III. THE CHERRY CRANBERRY.—So called from its similarity in shape, size, and color to that well-known fruit. It is of two kinds, large and small. Each of these kinds are in the market, and with this brief but sufficient notice of them we close this chapter.—(*See plate No.* 4).

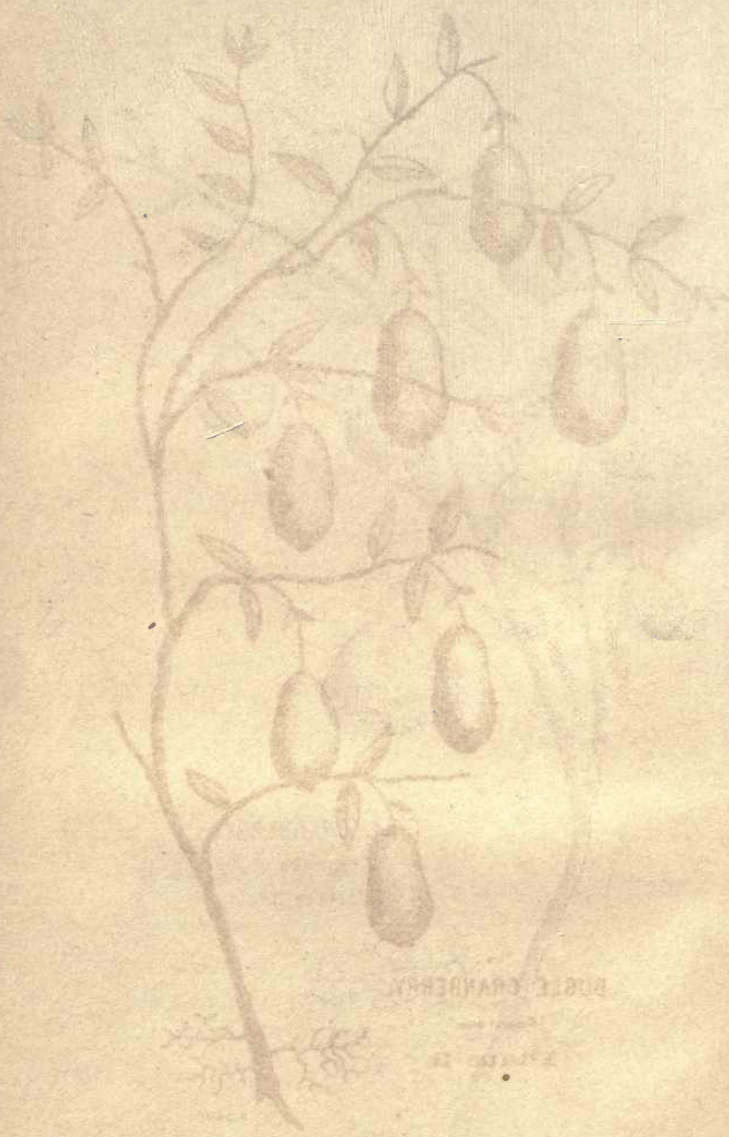


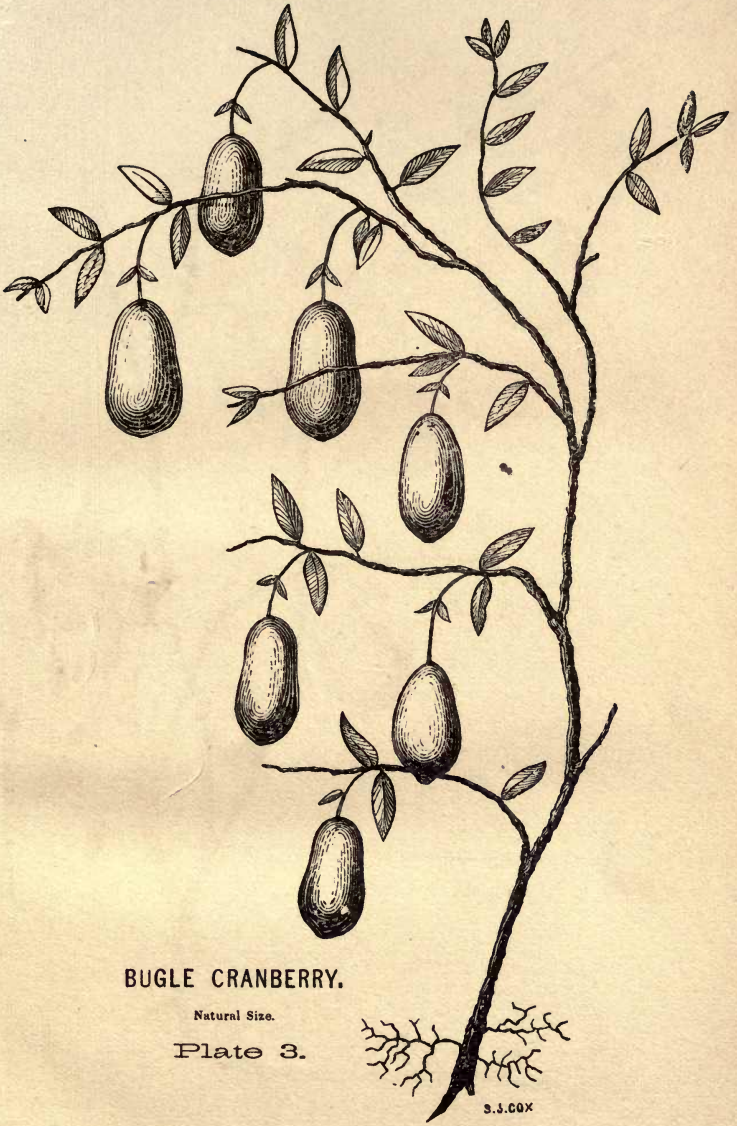
BELL CRANBERRY.

Natural Size.

Plate 2.

S.L.COX



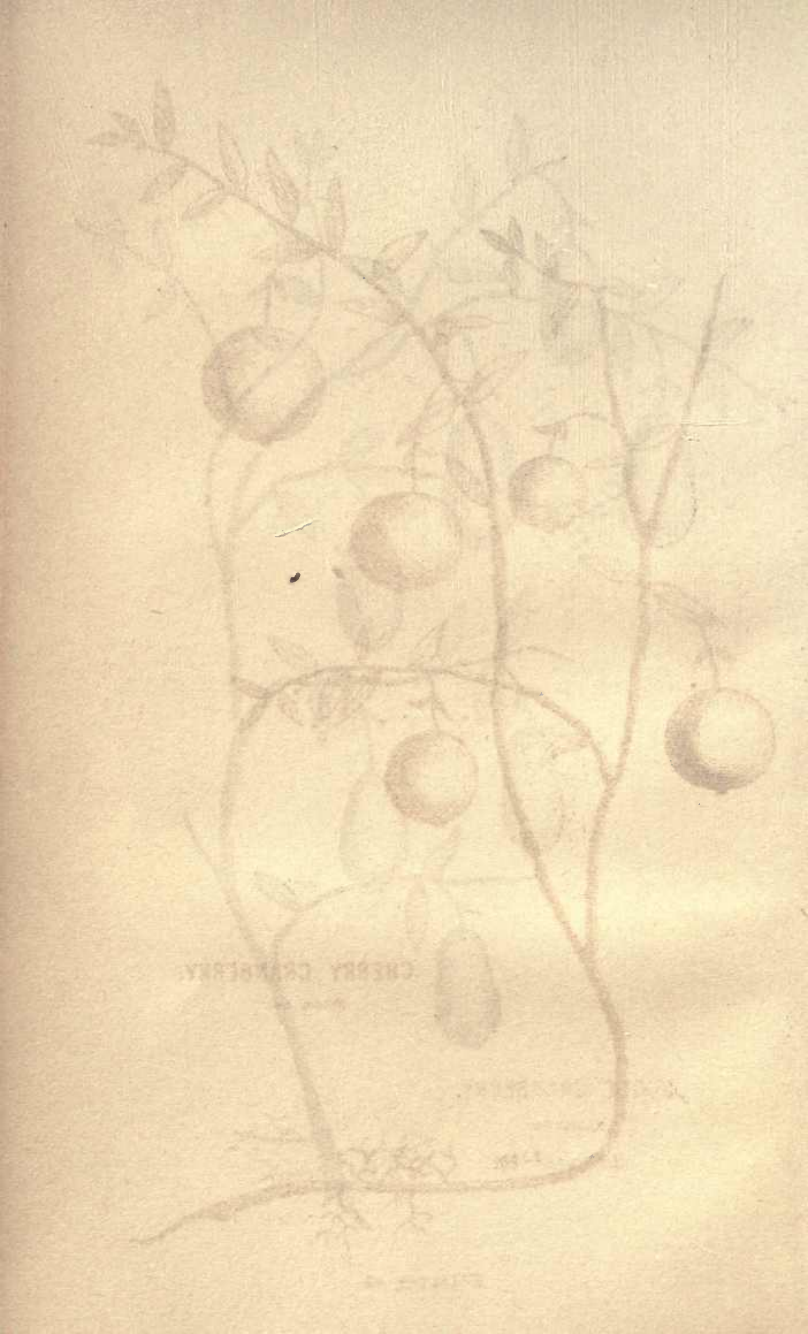


BUGLE CRANBERRY.

Natural Size.

Plate 3.

S.J.COX



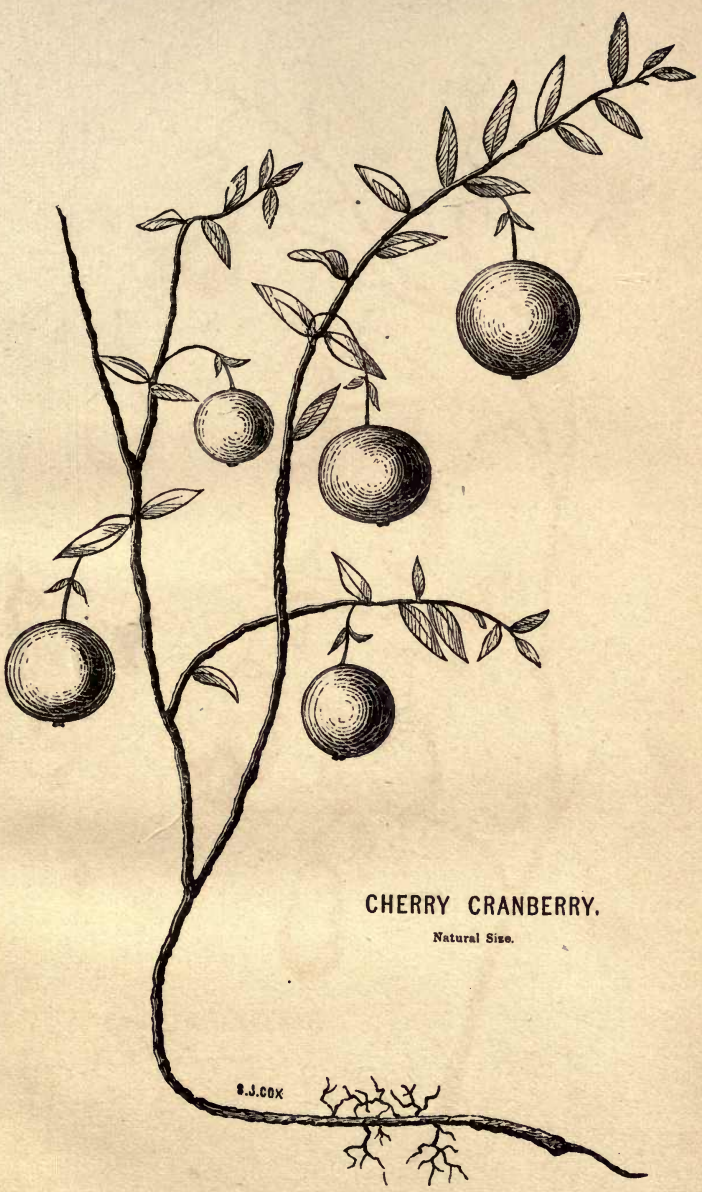


Plate 4

CHAPTER II.

FIRST GROWERS.

DIFFICULTIES OF CULTIVATION—FAILURES, AND THEIR CAUSES—THE FRUITS OF EXPERIENCE—AVERAGE YIELDS OF EARLY CROPS.

MOST new enterprises and undertakings have been attended with difficulty. For the want of correct knowledge, supported by experience, disappointment and failure have frequently been the result of efforts which have been sought to be crowned with success. There is not the commonest root or vegetable on the farm, but what requires knowledge and experience in its management.

Some individuals suddenly determine upon quitting the city store, and make choice of a farmer's profession as that which they intend to follow in the future of their lives. But any person, who knows even little of agriculture, is certain of this, that such an inexperienced individual is sure to meet with difficulties in his new calling which will be discouraging; and be-

berry a leading article of importance and profit on their farms. Up to that time little was known of how the vine should be managed.

The first cultivators were beset with difficulties—these were numerous; and so great were they deemed, that some individuals gave up in despair. These difficulties we will briefly sketch, that the reader who contemplates making a cranberry yard may not be discouraged by what he may deem hardships and obstacles in his way.

There was a general ignorance of the nature and habits of the vine. Some vines were found on the edges of swamps and ponds, and their runners would seem to avoid the water, and seek the dry upland. This led to the opinion that a dry situation was best adapted to the wants of the cranberry; accordingly, some planted the vine in locations that were rather dry and arid. They lingered on for a time, looked sickly, blighted, and stunted in their growth, yielding but little or no fruit. Some who tried this method were discouraged.

The cranberry vine is likewise found away from the edges of the bogs and swamps; situated in the centre of these are small mounds and tufts of soil that are to be met with in abundance. On these elevations the vine is often to be found. It will throw its runners down to the water, and from this fact, the conclusion

come to by many was, that the vine absolutely needed a situation like the one described, and then it would do well enough. They tried to imitate nature in this respect and failed. They gave them too much water, and drowned them.

The question of location was a source of trouble. Some would plant in the swamp, and others in dry situations. Some would select a southerly aspect, and others a northern one. There was no rule or experience to guide them in the commencement of forming a yard, hence their difficulties and consequent failures.

Then, soils was a source of perplexity to many. Would the cranberry do better in rich loamy soil, than in any other? Most plants flourished in such earth; then, why not the vine? It was tried, and the plants run to vines, looked well and thrifty, and bore but little fruit. Clay must be good for them. This was also tested, but it caked, and the plants in summer were stunted, shrivelled, and burnt up.

Peat was experimented with, and was found no better than clay, (but we shall show when we come to treat on soils, that this vegetable soil can be so prepared as to be a rival to beach sand). We must not overlook the treatment to which the vines were subjected in these early days of the cranberry culture. They were too frequently planted and left to take care of themselves, and the wild grass—the

almost fatal enemy of the vine—would choke them. All these difficulties produced their results. Some gave up, but others tried and experimented again and again, until success crowned their efforts.

The fruits of this rich experience are abundant, and have proved useful to those who are now intending to cultivate the cranberry vine. They have improved the vine itself,—have naturalized it, have by cultivation made the vine yield largely, and a fruit, too, in some instances about thrice the size of the berry in its native swamp, or bog. The intending cultivator has now this advantage over the first growers: he has instructions to fall back upon, instructions which it is safe to follow, because practical experiment has taught us what is to be avoided, and what is to be done. A yard can now be prepared at a much less cost than it could in former years, and those who have persevered in keeping their yards in a good condition, and have enlarged them, have for the last few years been realizing more than paying profits. It is this experience which cheapens the cost of a yard, for the advantage is with him who knows how to make it, while the ignorant will have to fight the difficulties and obstacles which opposed the first growers, and consequently it will entail greater expense upon him.

The average yield of early crops is not large. It takes a few years for the vines to mat, and if the loca-

tion is suitable, and they receive a moderate degree of attention, each year will increase their productive capabilities, so that the third or fourth year will begin to pay the cultivator with remunerative prices.

From the difficulties presented in this chapter which lay in the path of the early growers of the cranberry, let not the reader be discouraged. There is no occasion for such a feeling, because you have the benefit of experience, and the best method of cultivation to guide you; the particulars of which we shall state in the next chapter.

CHAPTER III

PROPER LOCATIONS FOR CRANBERRY PATCHES.

UPLANDS NOT SUITABLE—REASON WHY—STAGNANT WATER NOT SUITABLE—BEST ASPECTS—SITUATIONS—SHELTER REQUIRED.

JUST at this time there is considerable excitement on the subject of cranberry cultivation. It is probable that it has to some extent been created by the very high prices which this fruit has been fetching of late years, but more especially in the fall of 1855. It is quite proper that a practical farmer, who is aware of the fact above stated, should ask himself if he cannot cultivate the vine? if he cannot turn some portion of his land to some account? if he cannot appropriate a small patch of low meadow land to be planted with cranberries? It is believed that many who are keenly alive to this subject, would at once begin to make a survey of their farm to ascertain whether any part of it would be, or could be made into a good profitable cranberry patch, providing they knew what kind of

locations are most suitable, and best adapted to develop this berry.

In reference to *locations*, there are various opinions, each grower giving the preference to those situations in which his own vines do best.

We find that there are such differences on this subject that it will not be amiss to state them as clearly as we can, and then describe those *locations* to which the generality of producers so strictly adhere.

The question has often been put, Can cranberries be grown on uplands? Is it a suitable situation? will it pay to plant on elevated grounds? The cranberry is not a native of the upland, and will never do well in such situations if there is not nigh to the roots some of those elements which nourish and strengthen the plant in its wild and unreclaimed condition. The cranberry needs moisture, and that in great proportions for so small a plant. If it is set out on the upland, and it does not derive sufficient moisture from the atmosphere, that is, more than is needed by surrounding vegetation, and if it cannot derive it from another source, it will die.

If the cranberry is planted upon the upland, water should be in the ground, so as to supply the roots with moisture. If that situation is an incline, it will be better, because it will take off the surplus water under the plants, and leave them enough to meet their de-

mands. In upland planting, where the vines have done well and produced good crops, we are of opinion that they have been favorably situated.

In the absence, or rather scarcity of moisture, it is common to hoe and stir the soil about the roots of the plants, that it may be kept porous, so that the air may contribute to the vine's necessities.

You must not forget this, that those who plant on uplands are put to trouble and expense in frequent hoeing. Some individuals seem to admire and prefer the upland, but we cannot see any reason for this, except that it is the best situation they have at command. Years of trial and experiment may yet bring this location into notoriety. We have seen the upland tried on Cape Cod, but the plants failed, though some few lived and yielded fruit. The gentleman* who tried this experiment, believes that if he had taken care of his plants and hoed them often, he would have succeeded better. This is his opinion. In our investigations on this subject we fell in with the following item in the *Boston Telegraph*, which we give entire, that the reader may have all the evidence we can give him in favor of the upland as a suitable location for cranberries:

"Other experiments, however, show the practicability of raising cranberries on upland. Mr. Roberts'

* James Howes, Esq.

experiment embraced a tract near the foot of a slope descending in a westerly direction. The ground was ploughed eight inches deep, and harrowed; light furrows, three and a half feet apart, were run lengthwise, and the sods were cut from the swamp, carted on the upland, and placed three feet apart in the rows (though two would have been better), then carefully hoed and kept free from weeds for two years. No water was supplied except that received from occasional rains."

Notwithstanding this evidence appears strong and conclusive, yet we believe that the most experienced cultivators regard the experiment as hazardous, and in most cases fatal to the development of the cranberry. We give the opinion of one of the oldest cultivators on Cape Cod, which is,—"that if you plant on the upland it is difficult to raise your vines to bearing perfection, and it will entail much labor and expense upon him who undertakes it. Guard against the upland mania." Upland planting is regarded as "risky business;" it is therefore avoided on Cape Cod, where the management of the vine is better understood than in any other part of America.

Places in which stagnant water has collected have been selected by some persons, and converted into cranberry patches. It is positively wrong to do this, because the water lodging in the soil having no drain by which it may be drawn off, renders it sodden, cold,

and stiff, and it consequently causes the roots of the vine to rot, and ultimately the plants die from such a surfeit. Such locations cannot with safety be chosen except they undergo a thorough preparation—draining, levelling, and carting on soil, which is friendly to the growth of cranberries.

If these stagnant pools are selected, great precautions will be demanded in order to make them suitable for the reception of the vine.

Let us name those locations, and point out those situations which are most conducive to the full development of the berry.

In selecting a place for a patch, it is well to consider its aspect. Though we have seen the vine doing well, and to all appearances very thrifty, when the yard has faced the north, yet experience is in favor of a southerly direction. If possible, in forming your patch, let it be sheltered from the cold raw winds; give it the advantage of the warm breezes; by doing this you will be more likely to succeed than if you neglected it.

A swamp may be chosen. If you find the vine growing round the edges of a bog, you may safely conclude that the plant can there be advantageously cultivated. In the preparation of these locations, there is often much labor and some expense. But this depends upon its surface, what you have to do in removing the turf and "filling in." It is customary with

some growers to redeem a certain proportion of their swamps yearly; by thus proceeding, they ultimately overcome the natural obstacles before them, and accomplish what they intended to realize. The sight of each year's progress encourages them to persevering effort. Then it must be so that you can drain off the water at your own pleasure. If you make a cranberry patch in a swamp, and it is liable to have water standing in pools over the vines in the summer season, this will operate as a hindrance to the ripening of the berry. This precaution must be observed in making choice of such a situation, that you can expel or draw off the water, when it is necessary.

Meadow land, which is low and moist, affords an excellent location for the cranberry. In fact, these damp situations are very suitable, providing the dampness or moisture is not too cold and icy. If the moisture beneath the surface in which the vine is planted is of too cold a temperature, it will prove fatal to the young vines. Care must be had, in selecting for a yard, to ascertain if the water is too cold; if it is not, it may be converted into a useful and profitable cranberry patch. There *must* be water in the land in which they are planted. As a general rule, it is best to have it within twelve inches of the surface. The object of this is to give moisture The grower must have it, or his plants will fail.

A gradual slope is often to be met with, coming down to the edge of a pond. When such inclines are properly prepared and planted, they make the best of yards; and such locations generally have a soil in which the vine will do excellently; and there is not so much trouble with them, as the gravel chokes the weed.

Sheltered and protected positions should be sought after; situations in which the plants are not likely to receive and meet with the force of the fiercest and stormiest weather.

Sandy patches of land, or plats, that are near to the sea-shore, which are not liable to be overflowed with the salt water, on Cape Cod, stand high. We have examined many yards that are situated within a few rods of the ocean, only protected from the hardest weather by a small rising in the land, which forms a bank to resist the waves; and these yards are among the handsomest in the county of Barnstable; and every year these situations are becoming of more value and consequence to the cultivators of the cranberry.

There are on Long Island, and in New Jersey, vast tracts of beach land which are available, and admirably adapted to the growth of cranberries. Likewise, in the South and West, there are thousands of acres which are better adapted for the production of this fruit than anything else.

It is worth the agriculturist's while to pay some attention to this subject. Every year the cranberry is in greater demand, higher prices are being realized. It is becoming a staple article in the great markets of the country. Then, why do you, whom nature has favored with all you need, but planting your yard, neglect to make an effort to share the profits arising from the cultivation and sale of this article?

[NOTE.—In planting vines, dead levels by the side of the ponds should be guarded against. The yard should conform to the land behind it, sloping from the hill to the edge of the pond. The reason for this is, that if it is not done, water from the hills will cause the land to be springy and spongy, and that it will make stagnant water, which generates a green, slimy moss, which is an enemy to the cranberry vine.]

CHAPTER IV.

SOILS AND THE MODE OF PREPARING THEM

It is of importance that the nature of those soils in which the cranberry will most easily grow, should be considered, and known to those who intend turning their attention to its culture. Many failures have resulted, not so much from the unsuitableness of the location chosen, as from the badness of the soil. It is generally the case, that the best and richest soils are selected, as those in which experiments ought to be tried. Failures sometimes occur, not because the climate or the season are unsuitable, but because the soil is too rich. If the vine is planted in good alluvial soil, it will do well, apparently, but it will not bear fruit. Such soil will cause the plant to abound with healthy foliage, and a vast quantity of runners, but no fruit. Manuring is wholly out of the question. If it is attempted, it will kill the plants, or in some cases make them grow rank, and they will be worse than they are found to be in their native swamp.

Clay and marl are totally unfit for cranberry cul-

tivation. Either of this class are liable to cake and become hard; and whatever soil cakes and sogs around the root of the plant, is to be avoided.

If intending cultivators would exercise some caution in the choice of soil, it would prevent both trouble and expense. Failure is often caused by inattention at this stage of the undertaking.

Rocky loam is not very favorable to the development of the cranberry. The objection which lies against it is, that wiry grass and rushes abound therein. These grasses and rushes are to be guarded against in a cranberry yard, or they will choke the vine. Loam of the kind above-named *may be made to do*, but it will require excessive cultivation, in order to effect anything of importance.

Heavy soils, taken as a class, are not of much service; the grower will do well to avoid them to as great an extent as possible. And, indeed, it is questionable whether the vine can be cultivated at all to any purpose on soils of the above description. The vine may grow on such lands and seem to flourish, but they will not bear; they are unfruitful, and if so, therefore unprofitable.

The following soils are those which are preferred by the Cape Cod cranberry cultivators. There is one fact which ought to be stated here, as introductory to the subsequent suggestions and statements, and it will not

be amiss for the inexperienced cultivator to remember it. If he bears it in mind, he will avoid many difficulties which have discouraged others. It is this: *Dead sand, water* and *air*, are the elements upon which the cranberry feeds the best, and attains its highest degree of perfection; therefore, that soil and location which has these advantages is best adapted for the growth of the berry.

Beach sand stands the first. All other kinds must be rejected if this can be got. Experience teaches us this. Those yards which are wholly bottomed by *beach sand* flourish and yield abundantly, far better than those that have a different soil. During the past fifteen years every variety of soil and situation have been experimented with, and the results are entirely in favor of the *beach sand.* On Cape Cod, the greatest cranberry field in America, situations are sought for where the cultivator can be near to the shore, that he may be able to put on this sand, if it is not on his chosen location.

We will, in this connection, call attention to a small yard with which we are acquainted, which is situated near to the sea-shore. It was originally a pond; water stood in the basin, but it was not deep. On the banks and edges of this pond was sand in abundance, which the owner spaded down to the water, and continued to fill in. He planted; some said it would

not do much, but now it is one of the handsomest yards in the county. Everything seems to be favorable—soil, situation, and water—and the result is, heavy yields of the berry. In this, as many as three bushels have been picked off a square rod. And so well is it now known that situations where beach sand abounds are the best, that the most practical men are buying up such locations with the view of converting them into cranberry yards.

We are acquainted with one cultivator, whose yards produce from two to three hundred bushels of cranberries annually, who has the greatest proportion of his vines planted in the beach sand, and some few in loam. The difference between the two is marked. Those in sand are fruitful, those in loam are but small producers. He therefore carts off the loam, or carts upon it *beach sand.*

We could produce a vast body of evidence to demonstrate that beach sand is better adapted to develop the cranberry than any other soil; but the cases adduced are sufficient.

There is another reason, though, which should not be lost sight of, why this sand is so much better than any other soil. It is light, porous, and is almost incapable of supporting weeds. It admits the atmosphere freely to the roots of the vine, and is found to be the only soil in which the rank weeds can be effectually

kept down. It will thus be clear to the reader, that in such a situation, the plant can throw out its runners in every direction, and having no weed to contend against, will therefore spread rapidly, and soon become matted, a condition of the yard towards which the practical man looks with anxiety. If you are about to make the attempt to cultivate the cranberry, if possible, obtain *beach sand* in which to set out your vines; or coarse sand when the former cannot be obtained, but the white is preferred.

Peat is found to be excellent, in fact, next in value and importance to the beach sand, for the growth of cranberries. But peat wants management and care in its preparation, in order to be made useful to the vine. In selecting a peat swamp to be converted into a cranberry patch, it is necessary to take off the top turf, or grass, and if possible give the yard a little *incline.* When this is done, it is unsafe to plant at once. If you do so, you will find that the peat will in the following summer cake and crack. It will be hard on the surface, and some few inches below stiff and dry. The veriest tyro in cranberry cultivation knows that such a condition is very bad for the vine.

How is this difficulty obviated? Prepare the surface as we have stated above, and leave the yard exposed to the frost and weather for one year. When the frost is thawed out of it, it will crumble and be powdery.

It will never cake afterward. It will be light and porous. You may then with safety plant your vines, and with moderate attention they will do well.

[NOTE.—We have lately visited a famous cranberry producer, who is filling up a pond with loam, composed of *sand*, *clay*, and a small proportion of *marl*. The pond is about four feet deep. When this is filled up and levelled, he will plant it in the spring, believing that the soil will meet the wants of the vine.]

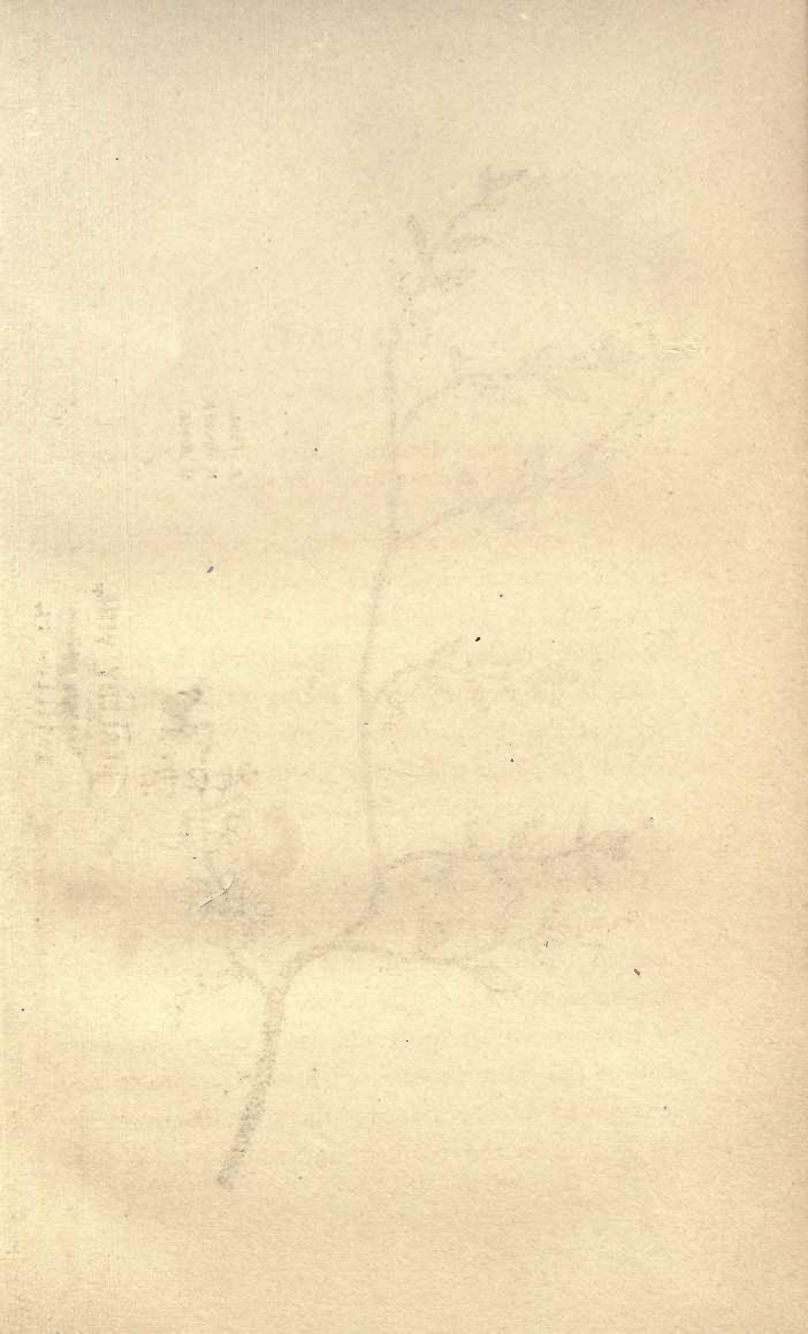
CHAPTER V.

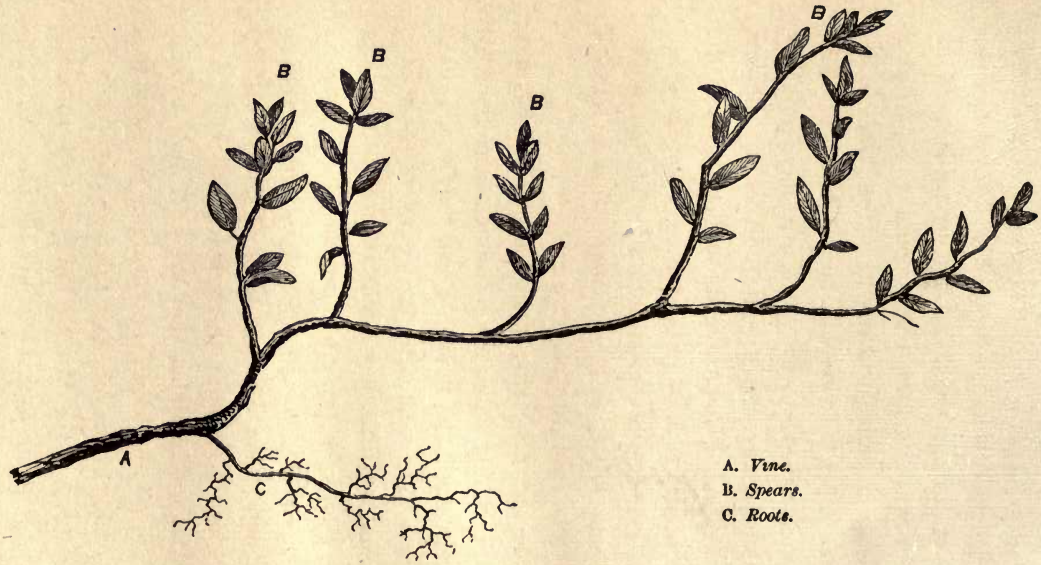
VINES.

Time for Selection—Healthy Vines—Their Appearance—Unhealthy Vines—Signs of.

It is possible that an intending cranberry cultivator may have the advantages of location and soils, plant vines, and fail. If the bearing or fruitful vine is not chosen, the result of the first attempt will be unprofitable. In determining upon making a trial, it is neces sary that the inexperienced should have some knowledge of the plants which he is about to purchase, or he should have implicit confidence in the person from whom he buys them.

The cranberry vine is such a simple, insignificant-looking plant, and the difference in the varieties is so hard to be distinguished, that this fact accounts in some measure for the utter failure of so many. There are instances, which we could easily cite, where even some of the most experienced have been misled and deceived by the appearance of the vine: then, we cannot wonder at the beginner suffering loss. We are





A. *Vine.*
B. *Spears.*
C. *Roots.*

HEALTHY VINE.

With Spears and Roots.

Plate 5.

aware that under the head of this chapter we are treading on delicate ground, and confess that we feel the difficulty of making the distinctive peculiarities of the vines so clear, that from this account a person may distinguish and select for himself. (See Plate No. 5.)

In some cases the vine will be planted in the fall, and at such times they are purchased most probably immediately before setting out. Of course, the leaf will be examined, and the color and strength of the spears noticed. If the purchaser relies upon the green appearance of the vine as an indication of its fruitfulness, he may be deceived, and regret that he allowed himself to be misled by such a sign.

Another may determine upon planting in the spring (which is certainly under some circumstances the most favorable season), and in such a case they would select and prepare their location in the course of the winter, that in May or June they might be ready to plant or set out. Plants for spring planting are most frequently chosen in the winter. But generally, the buying of plants at such times is a mere piece of guess-work, for there is likely nothing in their appearance which may certify the purchaser that they are good and fruitful. Plants may be selected in the spring or fall; one time is as favorable as the other for this purpose.

In speaking of the *Healthy Vine*, we wish to be undertood as referring to that which is the most fruitful—

bears the most abundantly—for there is a vine which is barren—and that we choose to describe as the *Unhealthy Plant.*

THE HEALTHY VINE, as far as we have been able to discover, presents an appearance of greenish brown on the leaf, the spears and runners are fine and thin, remarkable for their wiry nature and aspect. They seem of stunted growth, but form beautiful and tufted groups of spears in their process of matting.

The *Unhealthy Vine* appears altogether brighter and stronger, and hence from this peculiarity some are apt to be mistaken. We will on this point give the experience of an old and practical grower, as it is from him we have derived our information. He prepared some land adjoining a fresh-water pond, which in every way was adapted to develop the cranberry vine. He came in contact with a few rods of vines which seemed to be good, and his impression was that if he could secure them he would soon have an excellent yard. He bought them and set them out; he watched them closely, and was gratified in seeing them look so thrifty. They spread and matted remarkably quick, and he hoped for a great yield from such young vines. But when blossoming-time came, he perceived that they did not put out so much as his other vines, and that there were but very few berries on them when picking-time came. He tried these vines year after year, and

they only yielded here and there a fruit. He might have sold those vines repeatedly, but he refused to do so, and ultimately pulled them up and threw them into the pond. We asked him what the difference between those barren vines and the fruitful ones was. This is his statement relative to this point:

"The barren vines looked greener, had more bushy leaves, and stronger or thicker spears than those which produced the most fruit. I felt confident from their appearance that they were the best vines I ever saw; but I lived to find out that those *signs* which I took to indicate the productiveness of the plant, were only symptoms of *disease*, which disease means *barrenness*."*

This is the only case we have met with in which there was such a total failure in the productiveness of a good-looking vine.

From what has been here stated, we fear that the difficulty of distinguishing between the barren and fruitful vine has not been much obviated; but we will now state a method of selecting your vines, which cannot fail of assuring you of their real qualities.

We assume that you contemplate making a Cranberry Patch, that you have not on your own farm any vines, consequently you will have to go abroad for them.

1. *Ascertain who has the vine to dispose of.* If you

* Mr. Thomas Shiverick.

are in a position to find several, all the better. Assuring yourself that vines are for sale by the individuals whom you have found, before you buy take this precaution.

2. When the fruit is nearly ripe, go to those yards or patches in which the vine is for sale. See how they bear. If they bear well, or give a yield which is equal to the average of the vines of that year, you may buy. You will be certain that those plants are not diseased. You may then let them remain in the patch until you are ready to transplant, with this satisfaction, that you have obtained a good article.

3. Or, if you have confidence in the person with whom you deal, you can purchase as well in the winter as at any other period of the year; for the grower knows well which vines are good, and which bad, in what part of his yard grows the fine Cape Cod Bell Cranberry, and every other variety.

These suggestions may be safely followed by the inexperienced in reference to cranberry culture, and lead to the most favorable results, as they will prevent deception, a consideration of some importance in an undertaking of this description.

[NOTE.—The healthy vine, by some cultivators, is stated to be of medium thickness, or strength of spear, and bushy leaves. All the barren vines which we have examined are stouter than the yielding ones.]

CHAPTER VI.

CRANBERRY PATCH.

How to Make—When to Make.

In the foregoing chapters of this manual, *locations* and *soils* best adapted to develop the cranberry vine have been pointed out; it may not be unadvisable now to describe the different methods of making a patch.

1. On some farms, locations and soils are all that can be desired for the above purpose; in such a case there will be little demanded beyond labor. Should the situation be that of a shallow pond, with a sandy bottom, in which the water stands deep in the winter, and in summer it almost dries up, the first step to be taken is, either to construct a drain or ditch, by which you may draw off the water from the pond. Should the bottom or surface be uneven and irregular, you must endeavor to make it more level. It is not an uncommon practice with some growers, to make their patches flat, but this is rather passing into disrepute; the incline plan of construction or formation being preferred by most cultivators.

The sand which is on the edges of the pond can be carted or wheeled to the centre, so that you can bring the holes to that height which is most desirable. When this is done, you may rake over and give your patch that degree of sloping which will carry off the cold spring water. The object, in such a situation as this, of making a drain, is to carry off the water in the spring and summer; but however favorable it may be to have your vines "flowed" in the winter, that "flowing" must in the summer be prevented; the drain does this effectually.

2. *Swamps* or *bogs* have been spoken of as favorable situations in which the cranberry vine can be cultivated. In such locations, there is generally more labor and expense incurred in their preparation than in many others. First, the brush and undergrowth must be cleared off. Secondly, the top turf ought to be removed, if possible. If there is not sand in or about the margin of the swamp, if it is not too distant, of course you will cart it in, and "fill up" and "fill in," making the covering about four inches thick.

You will have to guard against, in this situation, the "coarse wild grass," which is the enemy of the vine. This is done by spading off the surface, and "filling in" with the sand. Should this situation be liable to be overflowed with water in the summer, the drain must be resorted to in order to save the vines, and

give them a fair chance of blossoming and developing the berry.

3. The banks of fresh-water ponds, when properly managed and prepared, are good. Should such a situation be too stony, the stones and rocks may be removed, and the surface made as fine as possible. Should the water of the pond be apt to rise too high, at an unseasonable part of the year, and flood the vines, this ought to be guarded against by forming an embankment, which would preserve the yard from being deluged.

4. There are situations which can be made available for a cranberry patch by a little labor. It will be observed, that there are locations which are favorable, both as to aspect and soil. But they are uneven or undulating. It is not unfrequently the case that a part of that land may be so low as to retain at all seasons of the year a degree of moisture which exists in sufficient quantities to meet the wants of the cranberry vine. On other parts of it the hills or slight elevations may be too dry and arid. In this case, those mounds must be removed and the land brought to the level of that situation which is moist.

5. Should you possess land which is in every way adapted to grow the cranberry, but is liable to be overflowed with salt water, and you are desirous of turning that land to account by cultivating the vine, the first

step to be taken is, to devise some plan by which the salt water can be driven back and effectually prevented from again overflowing it. This is done by making a dyke. The land thus redeemed must be prepared by taking off the sward or covering it over with beach sand. It is not safe to plant on land of this description immediately after it has been redeemed. It is necessary to let the land lie exposed to the rains and atmosphere a sufficient length of time, in order to get "freshened." When the salt has been taken out of it, by exposure to the weather, then it is safe to plant.

This chapter might be extended to a length which our limits will not allow, by describing how patches are made according to the location chosen. So we will conclude, by saying no cranberry yard is completed until it is fenced in such a manner as to keep out the cattle.

CHAPTER VII.

PLANTING VINES.

TIME FOR REMOVING THE VINES—BEST TIME FOR PLANTING—METHODS OF PLANTING—SOD PLANTING—OBJECTIONS TO—SEPARATION OF SOD VINES—HOW TO PLACE THE ROOTS AND THE RUNNERS—METHODS OF CUTTING AND PLANTING—BROADCAST METHOD—PROPAGATION FROM THE SEED IN THE BERRY—METHODS OF—OBJECTIONS TO.

THE cranberry vine can be removed from the soil in which it has been cultivated, or from its native swamp, either in the spring or fall of the year. If the vine is taken up and left exposed to the winter weather it is almost sure of being killed, and therefore no one to whom this fact is known would do so. The vine can be removed from the soil and left without earth through the winter under some circumstances. If they are taken up in the fall and left in a moist cellar until spring, they will, when planted, take root and do well. "I would as soon have vines left in my cellar through the winter, for spring planting, as I

would have those fresh from the yard or the swamp."* Experiment has proved that the vine can be treated according to the latter method without detriment to itself. It will, therefore, be evident that the vine can be taken up and have all the soil taken from its roots, be packed in barrels, and forwarded to any part of the country, without being injured.

It is admitted by most cultivators of the cranberry that in the absence of ability to "flood the patch" in the winter, that it is better to plant in the spring than the fall, because those vines set out in the fall, which are not "flowed," will get frozen, and when the frost is thawed out, it will throw the young plants up and out of the soil. In circumstances like these, spring planting is the best.

Those who determine upon this season instead of the fall for setting out, will, of course, not remove their vines until they are prepared to transplant. *May* and the early part of *June*, for spring planting, are believed on Cape Cod to be the most favorable months. Should you determine upon either one of these months, which you may do with perfect assurance that the removal will not injure your vines, you will, therefore, defer their removal until you are ready to give them a place in your newly-prepared situation.

* Aaron Crowell, Esq.

In other words, do not remove your vines until you can plant them. Though vines may be taken up and kept from the soil for three or four months in a moist and warm situation, yet all cultivators prefer the former method or time of removal.

There are two or three advantages connected with spring planting, which we will name, which he who sets out his vines in the fall cannot possibly have.

If in the spring you intend to plant, you have the winter before you for preparation. You may probably with your own labor and a little assistance be able to make as much as you think it best to plant. You have more time on your hands, and therefore you can afford to do your work better and thoroughly. To get ready for fall planting, you have to hurry everything, and consequently your work is likely to be slighted. In making your patch in the winter, you can study the characteristics of the location, and learn to what depth and extent it is liable to be flowed, and whether it is flowed from *natural springs* or water that is carried into it from *other sources.*

Having called your attention to the time of *removing* and *planting* vines, we will present to the reader the various methods of planting, and specify those modes which are preferred. It must not be supposed that there is one uniform plan of treating the vine. The cultivation of this plant is but in its infancy,

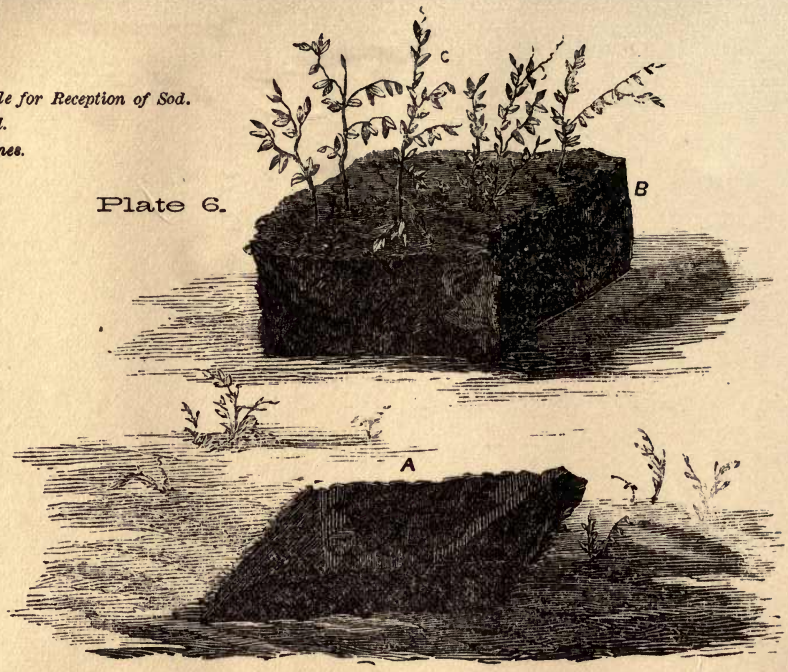
and consequently growers will continue to make trials and experiments, until they acquire a knowledge of a method which to them is satisfactory. Various methods have been adopted and pursued with different degrees of success, which we will now mention: (See Plate No. 6.)

1. SOD PLANTING.—This is the oldest plan. It was customary in the early days of cranberry culture to cut out a square or oblong sod on which the vine was growing, and then to prepare the yard to receive it just as it was taken up. It was thought that this plan was the best, because the vine did not suffer by such a removal. But experience has taught cultivators that this is not the best mode. There is this forcible objection lying against it. In removing the sod, rank weeds and foul grasses are brought with it, and it has been proved that these grasses and weeds retard the matting process of the vine, and the yard becomes one of weeds and wild grasses rather than of healthy cranberry plants. If you plant on the *Sod System*, it will entail much labor upon you; for even if you determine upon keeping down this wild stuff, you will find the difficulty to be greater than you anticipated.

We may safely advise the intending cultivator to guard against the method which has just been described. Another plan is,

A. *Hole for Reception of Sod.*
B. *Sod.*
C. *Vines.*

Plate 6.



S. J. Cox

SOD PLANTING.

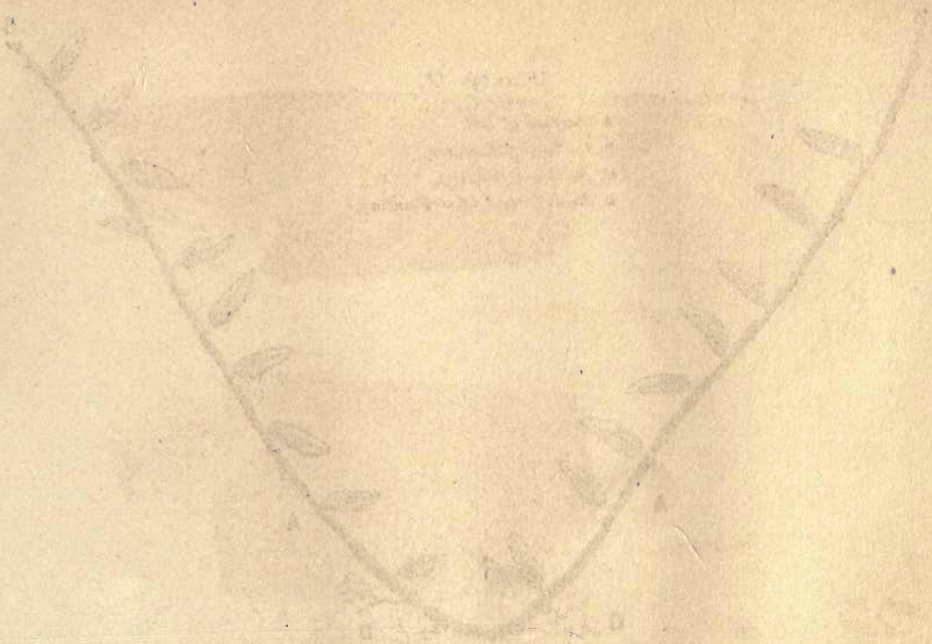
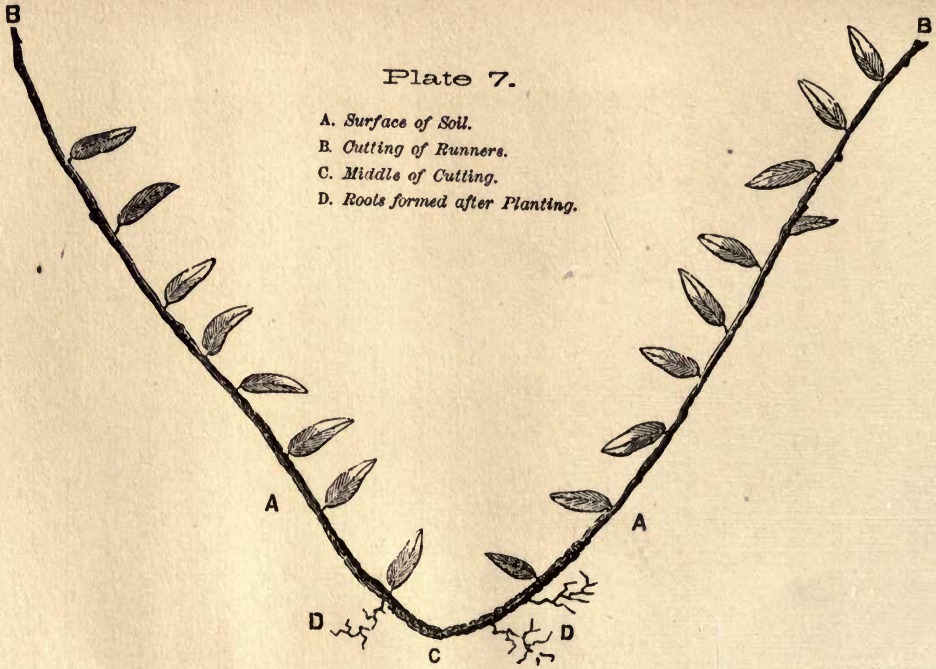


Plate 7.

A. *Surface of Soil.*
B. *Cutting of Runners.*
C. *Middle of Cutting.*
D. *Roots formed after Planting.*



CENTRAL CUTTING PLANTING.

2. THE SEPARATION OF SOD VINES.—A method which is far superior to the former.

On obtaining the sod, and before planting, you take the sod on which the vine is growing, examine it closely, then place your fingers beneath or among the roots and tear them out as carefully as you can. When this is done, separate the vine into as many as you can conveniently, but be careful to leave two or three small spears or runners on the roots. When you plant, place the roots in the soil first, then spread out the spears or runners, and bury them in the soil, but being careful to leave out of the earth the ends or tips of those spears or runners.

The reason for this method is, that from those parts of the spears or runners which are buried in the soil will start new roots, and each root will be a new vine, and instead of only having one root from which the vine may start, you have two, or a half dozen, according to the number of spears on the vine you plant. This is a favorite method among the most successful growers of the cranberry.

A patch planted on this system matts rapidly, and has rarely been known to fail. It is about the best method now known; you may follow it with safety: (See Plate No. 7.)

3. CUTTING PLANTING.—In pursuing this method

when the vine is obtained, it is cut up into convenient lengths, say from four to six inches. One of these cuttings is taken, but not planted with the end down and one end out of the soil; it is *planted in the middle of the cutting, leaving up both ends*, so that when it takes root, instead of there being but one runner, there will be two. This is a good and safe method.—(See Plate No. 8.)

4. CUTTING PLANTING may be continued in another form, take two or three slips or cuttings, about three or four inches long, and force the lower ends into the soil with a dibble; each slip will take root and form a vine. This has been tried with success, and in some parts of the country it is a popular method.

5. BROADCAST PLANTING.—When the vines are secured in sufficient quantities, they may be cut about two inches in length by a common hay cutter. When the patch is prepared to receive them, they may be scattered over the surface as is wheat or oats, and then well harrowed into the soil. The cuttings will take root from the base of the leaves, and will soon spring up and present the appearance of young and healthy vines. Some prefer to bury these cuttings in drills. But it is mere matter of opinion as to which plan is the best.

A. *Surface of Soil.*
B. *Cut portions of Vines.*
C. *New Roots growing from Base of Leaves.*

UPRIGHT CUTTING PLANTING.

Plate 8.

6. PROPAGATION FROM SEEDS.—If the seeds of the cranberry are sown, they are not always certain of coming up. The situation may be too cold for them, and the seed is destroyed. Seed is often tried, and will send up a small fine spear, but generally is killed after the first year. We have heard it stated by several cultivators that the seed may, under some circumstances, be used, and in the third year the vines raised from them would bear small quantities of fruit.

The best situations in which to sow the seed of the cranberry are the edges of fresh meadow land; such places are generally protected, and they seem favorable, or rather the most favorable situations for propagation from seed that are known.

Some persons who have tried this experiment have put into the soil the whole berry; few have been found to come up, the seeds have rotted. We tried another plan, which was as follows: we obtained the berry and then broke it in water. The seeds separated from the berry; these we collected and sowed in the patch prepared for them, and found them to do better than any other method. But raising vines from seed is uncertain, hazardous, and if you succeed, you have a long time to wait for the fruit.* We would not advise seed planting; from vines and cuttings the best patches are formed.

* Asa Shiverick, Esq. Joseph Hall, Esq.

7. DISTANCES OF PLANTING.—This is wholly regulated by the quantity of vines you have at your command, and the extent of land to be covered. Some will plant them three feet apart. In this case, it must take them a long time to mat. Some plant them eighteen inches apart, which of course is better than the former plan, because they will be matted all the sooner. The rule is, the nearer you can plant your vines the better, providing your patch is not overrun with weeds and foul grass. The object in such a case of planting them wider apart would be to give the cultivator an opportunity of getting between the vines and destroying the weeds, and whatever else might be likely to choke them.

CHAPTER VIII.

TREATMENT OF YOUNG VINES.

Weeding—Hoeing—Flooding.

When the vines have been planted, their development depends much upon the treatment they receive from the cultivator. If they are neglected, or not noticed, they will have to contend against wild grass and foul weeds, so that it will be impossible for them to be very thrifty.

If the patch which is but moderately cared for is compared in appearance, condition, and fruitfulness with the one that is neglected, the advantage will be found to be with the former, over the latter. Cranberries do not need that amount of labor bestowed upon them which is given to the cultivation of corn; but nevertheless, they must be watched and attended to, in order to be saved.

In patches of land converted to cranberry cultivation in which there is an abundance of weed, it will be necessary to destroy it, or keep it down in such a way that the young vine may have few obstacles

to its spreading and matting. In some regions of country this is done by walking over the patch a short time after planting, and if the wiry grass has made its appearance, pulling it up. If this stuff is kept down and out of the way, in the first year the vines will give encouragement to the cultivator. In managing the young vines, it is deemed necessary to attend to them in this way for the first three years, when after that period they require less attention and labor; but it will always be well to do a little every year by way of keeping down any foul stuff which may have made its appearance.

In some localities, it is customary to go over the patch in the spring of the year, and to pull up any briers, or the roots of wild grass which may be met with. In well-established yards more labor than this is seldom called for. For a large yard a day is sufficient.

Hoeing is resorted to by some cultivators. Where the vines are planted two feet apart this is necessary, or may be resorted to with safety for the first two years. In that time, the heavy or thick tufts of weed can be killed, and the soil, thus lightened, will prove a benefit to the vines, as it is thereby rendered more porous. After that period it will be hazardous to hoe, as it can hardly be done without cutting and destroying some of the vines. Should the weeds threaten to become troublesome after this, they can be removed by

pulling them up with the hand, after having loosened them with a fork. But generally after the second or third years' careful cultivation, the vines will take care of themselves and will eat out weeds and grass, and thus leave but little to be done by the grower.

On uplands, where the vines are planted, the way in which they are treated in order to make them do well is to hoe them, and that as frequently as you can. In this case, it is usual to plant in hills, and keep a space unoccupied between the hills, so that in hoeing, there will be no runners cut or destroyed. But the object of hoeing on uplands is more with the view of making the soil light and porous, so that moisture will the more readily be taken in and received by the roots.

FLOODING.—In fall planting, it is always best to flood. And where the vines can effectually be covered with two or three feet of water, they are not likely to suffer. The depth of water which covers them prevents them from being frozen, so that when the thaw sets in, the vines retain the situation in which they were planted. This water should be drawn off in the middle or latter end of May. But if frost continues, it is not well to drain it off until it disappears, for by keeping the vines flowed it prevents them from blossoming, so that there will be no danger of the flowers being destroyed by frost. Though the vine is a hardy plant, yet its blossoms, and berries are very sensitive, and are soon

injured by the frost, early or late. In managing the vines, the cultivator will have to be guided by the condition of his yard whether it is weedy or otherwise, dry, or too moist, and the nature of the climate in which his patch is situated.

CHAPTER IX.

BLOSSOMING TIME—PRECAUTIONS REQUIRED.

In the winter, the cranberry vine appears of a dark brownish green, and scarcely looks better than the poverty grass which abounds in sandy regions. In the spring, it begins to lose that peculiar color, exchanging it for a clear dark green. Then it is that the uninitiated in the culture of cranberries begin to anticipate something from the vines, which at least will be pleasing to the eye, if not profitable to the purse. The blossom of the cranberry makes its appearance in the latter part of June, and sometimes as late as the first of July. The quantity of blossom depends upon the quality of the vines, the suitability of location, the adaptation of soil, and the season. From the appearance of the vines at that time, the cranberry grower begins to form some idea of the crop he may possibly have.

The flower of the cranberry is beautiful and delicately formed. It seems as though it would be susceptible to injury from trifling causes. Its color is that of a very pale pink, slightly tinged with purple;

and it is rarely or ever found on the runners, but invariably on the spears or stems which are thrown up from the creepers.

There are about this time some precautions required; but they are more needed in some parts of the country than in others.

Districts in which there are cranberry yards, which are liable to be visited by frost late in the spring, call for especial care from the cultivator. If his vines blossom too soon, they will most probably be killed by the frost, or at most he will have but a scanty crop. The vines may, in the blossoming season, present an abundance of flowers, and a night of frost cut them off. In other regions where they are not so likely to suffer from this cause, the same precautions are not demanded.

Here, and in cases of the kind just named, the advantage of flooding is apparent. Those who can flood their vines, can retard the blossom, or keep it back until they think their vines are not likely to suffer by frost. The practice generally followed is, to keep the water over the vines till the last of May or middle of June, and then draw it off. The sooner the water is drained from the yard, the vines will blossom all the earlier for it; but that would be no advantage when frost has not entirely disappeared from that locality

To keep back the blossom, nothing more is required than to continue the water over the vines.

Flooding is not of so much importance and value in those regions where the frost soon or early in the spring disappears, as it is in those parts of the country where it continues up to the last of June.

[NOTE—Vines which are "flooded" during the winter, when the water is drawn off from them are tender, and the blossom which such vines put out is sooner injured than that which appears on the unflooded vines.]

CHAPTER X.

DISEASES OF THE CRANBERRY.

THE WORM—TWO KINDS—ONE ATTACKS THE VINE AND THE OTHER THE FRUIT—FIRE BLIGHT—ROT—BEST REMEDY FOR THE WORM

LIKE every other plant or fruit-vine, the cranberry is subject to certain drawbacks, arising from causes which we shall endeavor to enumerate.

1. There is the *worm*. We have not seen it, and have only met with one grower who has, and he describes it as about an eighth of an inch in length.* It has been sought after with extreme care and diligence. Its presence seems only to be known by the devastations it commits. And so great are they, that in a night, vines which seemed doing well are rendered sickly, and the crop is cut off. Not having seen this enemy to the vine, and being unable to ascertain, even from those who had suffered much by them, we are therefore unable to identify it with any insect which visits other fruits and destroys them. (See Plate, No. 9.)

This *insect* attacks the vine in a very peculiar

* Thomas Shiverick, Esq.

A. *Healthy Leaves.*
B. *Diseased Leaves.*
C. *Webbing.*

APPEARANCE OF VINE DISEASED.

Plate 9

manner. The vine of last year will have started spears or uprights, in that season those spears have not attained their growth. In the following spring they will become taller, and the new growth will be perceptible by the contrast. The former year's growth has a dark hue, and stronger stem; the new growth is thinner, green in appearance, and altogether more delicate. "The worm begins its ravages from the point that the new growth has started. It does not descend down the old growth, but from the base of the new spring growth it begins its operations, working upward."* This insect comes in swarms. It alights on the leaves, and extracts the moisture. There seems to be in the vine or young leaf a juice which by them is sought after. When it is present it is known by the vine being webbed up and appearing as though it was suffering from the fire blight.

At the period when these attacks are made, there is some degree of certainty. It is most frequently immediately after blossoming time, and their ravages are often fatal to the crop of that yard which they visit. There is something singular about the plan upon which they act, but as it is new, we must describe that action, leaving the ascertaining of the cause thereof to further research and more experience. We are familiar with the situation of a large pond which is bordered

* Howes Chapman, Esq. Joshua C. Howes, Esq.

by beautiful cranberry patches. It was there that in the last season this insect made its appearance. It attacked certain patches and left the adjoining ones untouched. The reason for this has not yet been given, extended study of the subject may enable us in some measure to account for this.

2. THE FRUIT WORM.—This is different from the insect we last referred to, it is named the *cranberry worm.* It is something like the apple worm, but smaller. It makes its appearance about the latter part of July or the beginning of August. In its attack upon the berry it eats its way through the exterior skin, and then enters the interior of the fruit, which after that is of no value to the producer. This *cranberry worm*, is one of the greatest enemies that the cultivator has to contend against.

3. THE ROT.—This is not so common as either of the other enemies of the cranberry, to which we have alluded, yet the rot appears in some yards, and sweeps off the crop from that particular locality it visits.

We have visited a yard, which in former years was a shallow pond. The owner had it filled in and levelled off. On this, he planted the vines; they did remarkably well, were soon matted, and seemed to be thrifty. The vines put out great quantities of blossom, and the fruit began to form. The cultivator noticed that in the lower part of the yard the berry rotted, and this,

year after year was the case. The upper part of the yard remained untouched. To account for this it is difficult, but we will give the opinion of the proprietor of this patch and of another experienced cultivator,* and leave the reader to draw his own conclusions. That part of the yard in which the berry rots is a little lower than any other portion. It is supposed by the owner to be too wet, and that this is the cause of the rot.

The vines on this patch are exceedingly well matted, they are thick, and it is supposed that in consequence of this, the sun cannot fairly shine upon them, and hence the rot.

If it is the first, then, the remedy is to raise the soil, and bring it to the level of that part of the yard in which the cranberry does not rot; or, if it is the second, there is nothing more required than to thin out the vines, so that the sun may shine fully upon them. Is there any remedy for the worm? No remedy has yet been discovered for that insect which attacks the vine and the young spears of the plant, should it reappear in yards that it has already visited, doubtless the proprietors will try some experiments which we trust will be successful.

To meet the case of the *cranberry worm*, flooding is resorted to. It is well known, that those yards which

* Joseph Hall, Esq. Thomas Hall, Esq.

can be flowed, are not so likely to be attacked by this worm as those which are not covered with water during the winter. The conclusion thus arrived at is, that flooding is a partial remedy for this enemy to the cranberry. Hence, those who are constructing a yard, will if convenient endeavor to secure this advantage, if it does nothing more than aid in keeping down the cranberry worm.

CHAPTER XI.

CRANBERRY PICKING TIME.

DIFFERENT METHODS OF PICKING—RAKING—PACKING.

THE cranberry is rarely ripe until the beginning or middle of October. At that time the cultivators begin to pick the fruit and get it ready for market. There are two methods of picking. The first is by hand. It is customary in some regions to engage children for this purpose, who are paid at the rate of thirty or thirty-three cents per bushel. It is seldom that the best or quickest pickers gather more than three bushels during one day. To do this is extraordinary work. There must be a superintendent or overseer with them, or they will be apt to slight them. The interest of the cultivator is to have his vines picked clean.

The second method is by *raking*. This cannot be adopted in cranberry yards where the vines have become matted. To attempt it would be folly, because the teeth of the rake would tear up the vines and runners, and do them a serious injury.

Those yards in which the rake is used from the first

year of gathering the berry, has been the plan adopted. The rake has pulled the vines in one direction, and it is always in the direction in which they lie that they are raked from year to year. Where this plan is followed, it is not likely to be so injurious as it would be in the previously mentioned case.

The packing of cranberries is of some importance. It is usual to spread them out so that all the dew or moisture may evaporate. Then they are winnowed or picked over. The rotting or defective berries are removed, and they are cleaned over in such a manner that leaves and straws are not to be found among them, when in a marketable condition.

If the market to which they are to be forwarded is not very distant, they are packed dry in barrels, and thus sent off. But in sending them to Europe or California it is deemed best to pack them in water. Small kegs are usually secured for this purpose. When they are thus treated, the good ripe cranberry can be sent on the longest voyage without being injured.

CHAPTER XII.

THE GREAT CRANBERRY MARKETS.

BOSTON—NEW YORK—PHILADELPHIA—INFLUENCE OF CLIMATE ON PRICES—RELATIVE VALUE OF DIFFERENT SPECIES OF CRANBERRIES—THE INCREASE IN THE CONSUMPTION OF CRANBERRIES.

IN the immediate neighborhoods in which cranberries are cultivated, but few are consumed. The reason of this is, people living at a distance from the place in which they are raised are willing to pay a higher price for them. Time was when the cranberry was not valued more than the common barberry. But people have lived to discover its excellent qualities, and since it is so highly appreciated for its culinary purposes, there are those who are willing to pay an almost fabulous price for the berry. It has become in many families a necessary luxury. The wealthy would as soon part with the apple as the cranberry, and it is the rage among the rich, and even those who are not so fortunate, for this fruit, which keeps it up to that price which puts it beyond the reach of the poor.

Boston is the great market for cranberries. It is nearest to those regions in which the vine is cultivated, and the fruit-dealers, knowing how much it is sought after, can, by the course they have recently pursued, realize handsome profits upon what they purchase. Of such profit is the cranberry, that growers have been visited by city dealers a month or six weeks before the berry has been ready to pick. They have offered a price which was deemed handsome by the cultivator. Some took them, as they bid for the whole crop, and others refused. Even the last season, growers received from ten dollars to fifteen dollars per barrel. This has been obtained in the Boston market.

The New York market is said to be good for the cranberry, and this is well known to the Boston dealers who ship the fruit to that port and Philadelphia, and the other great cities of the Union.

The consumption of the cranberry in the great cities is such that the dealers can realize their own prices, by doing as they did last fall, buy up the berry and get it into their own hands. The wealthy will have the cranberry, and it is immaterial to them whether they pay eight or twenty dollars per barrel.

The American cranberry is coming into notice in many parts of Europe, but more especially in England. The way in which it is sold there is in small bottles, into which the fruit is first put, and then filled

with water and hermetically sealed. These are sold at a high price. We have seen a pint of cranberries marked "Cape Cod Bell Cranberry," sold at four shillings sterling, in the Strand, London. There is not the slightest doubt that as the American cranberry is superior to the English or Russian, a market will be found for it, at paying prices, in almost any part of the civilized world. It seems to us that the American agriculturists do now take the lead in the cultivation of this fruit, and will continue to do so. We are convinced from what we know of this country that if our farmers only proceed in making those trials and experiments which it will be worth their while to do, and bring their swamps, ponds, and bogs into a proper condition to receive the vine (in the way we have previously pointed out), they will not only be able to supply all that are needed for home consumption, but foreign demands likewise. But let not any one suppose that more cranberries are now raised than can be disposed of at paying prices. If the cultivation of the cranberry proceeds as rapidly as we hope it may, all that can be raised will find a market in the country.

The influence of the weather upon the English grain market is well known. How dry or wet weather will affect prices there is astonishing. The cranberry for its market price before it is picked is somewhat dependent upon the climate

If there has been a frost about the time of blossoming, then that circumstance is laid hold upon, and the cry is raised, there will be a short crop; or should there be too much rain, or too much sunshine, or a frost early in October, all are equal blessings to the great dealers, who know well how to manage this part of the business to their own advantage.

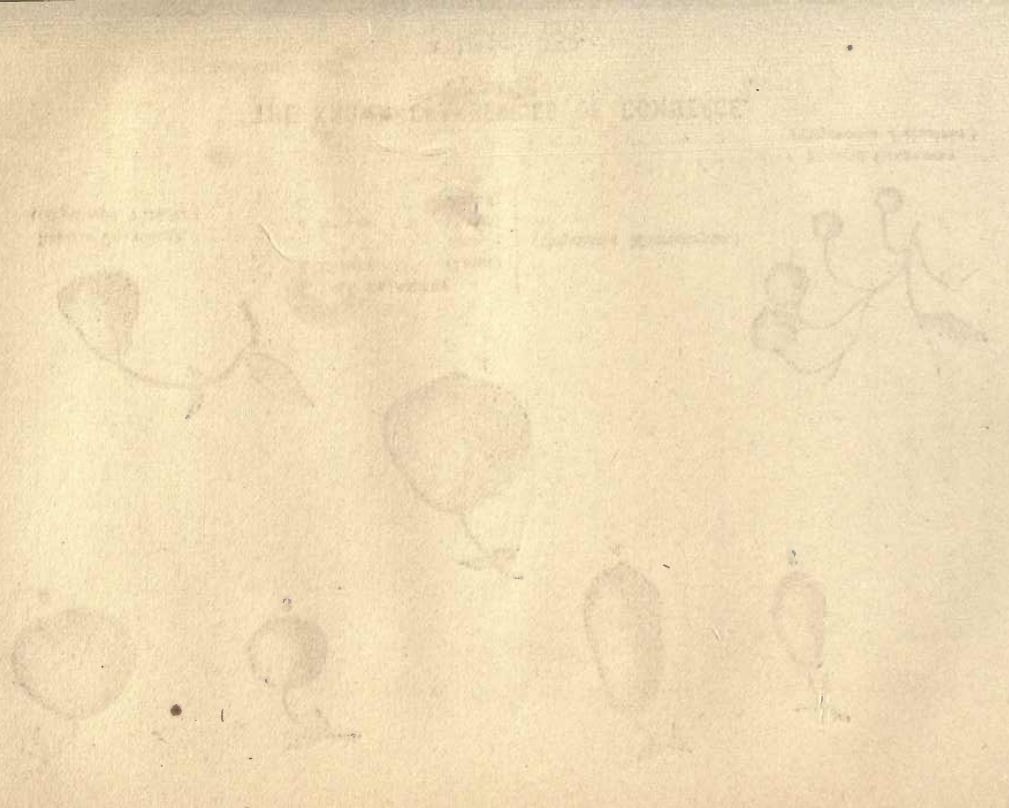
All cranberries are not of equal value. Some will not keep so long as others, neither are they so highly colored or flavored as the best varieties, yet the poorest berry is often disposed of at the same price as the best.

There are cranberries which are picked before they are ripe in order to save them from the frost. In some parts of the country producers do this to save themselves, or their fruit would be affected, and rot. Cranberries gathered before they are ripe will not keep so long as those that have matured.

Hundreds of bushels are taken into the market in this condition, and they are afterwards branded and sold as a superior fruit, realizing just as much as the very best.

Those cranberries which come into the market that have lost their green hue, and only have a delicate flesh color must be used within a few months or they will decay.

Growers of cranberries have their preferences for



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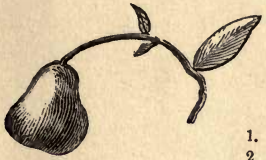

Russian Cranberry.
(*Oxycoccus Viridis.*)

1. Bell Cranberry.
2. Cherry " (Large)
3. " " (Small)
4. Bugles " (Large)
5. " " (Small)

(*Oxycoccus Macrocarpus.*)

English Cranberry.
(*Oxycoccus Palustris.*)

THE KNOWN CRANBERRIES OF COMMERCE.

Natural Size.

Plate 10.

certain varieties of fruit, yet it is strange that there should be a difference in the quality of this berry, and all kinds should bear a uniform price.

The Bugle cranberry, or egg shaped, large and small, is a good variety. It is pale in color, not so deep and dark a crimson as some other varieties, neither is it valued so highly by those producers who are acquainted with the qualities of the Bell or Cherry.

The Cherry is round and large; of this there are two varieties, large and small. It is hard, its color dark almost black when properly cultivated. *See Plate No.* 10.

The Bell is the favorite of some of the most extensive cultivators of the cranberry. It is a large variety, and grows in some parts to great perfection.

The Southern cranberry will ripen, but it is small and light, consequently not so valuable.

The cranberry grown in those regions of country in which the season is too short for them, cannot be so valuable as they otherwise would be.

The cranberry produced on Cape Cod attains greater perfection than it does in any other country with which we are acquainted. It is larger: it is deeper in color; it will keep better than any other.

The "Cape Cod Bell Cranberry" and the "Cape Cod Cherry" now take the lead, and must continue to do so; and we think that the time will come when

these varieties must command a higher price than any other that will be offered in the market. The climate and soil of Cape Cod are well adapted to the perfect development of the cranberry, and these natural advantages combined with the experience of cultivators, gives them the advantage over others.

There is a great increase in the consumption of cranberries, and this fact should encourage those who possess lands, of the kind pointed out in the body of this manual, to make an effort to cultivate the vine. If you can but get the vine into a favorable situation, and know how to manage it, it must pay you for the pains taken in its cultivation.

The cultivation of the cranberry is but in its infancy. Ten years more of hard and practical experience in its management will do much to establish or destroy the theories which have been set up by some cultivators.

CHAPTER XIII.

THE OXYCOCCUS PALUSTRIS, OR, UPLAND CRANBERRY.

SINCE writing the previous parts of this manual, I have been favored with communications from Professor Shepherd of the Western Reserve College, Ohio, and from Mr. Trowbridge of New Haven, Conn., on a recently discovered upland cranberry, and also with a specimen of the fruit gathered from the vine in its uncultivated condition.

It has long been desired to adapt the lowland or bog cranberry to the dry, poor, upland soils. Many have made the attempt to do so, but have failed. If the variety now under notice is what it purports to be, I see no reason why it cannot be appropriated by farmers who possess poor land, thereby superseding the necessity of wasting efforts on attempts to naturalize the swamp vine to arid uplands.

Professor Shepherd found the upland cranberry during his recent explorations around Lake Superior. It was growing on the dryest and poorest soils, flourishing and producing an abundance of fruit.

The fruit, a specimen of which I now have in my possession, is much smaller than the lowland cranberry. It resembles an ordinary pea in size and shape. Its color is of a beautiful pale red. The skin is bright and glossy. It is not so hard a fruit as the swamp berry, and therefore will not keep so long. It is soft and is excellently adapted for jellies and preserves. The flavor is not so acetous but remarkably pleasant and agreeable. If the fruit becomes known, it is more than probable that it will be much sought after. I have seen a variety much resembling this, growing on the moors and barren mountains in the north-western parts of England. The inhabitants of those regions seek them in their season with great avidity, prizing them highly for their rare qualities.

The vines on which they are found resemble somewhat the bog cranberry, and they usually bear well. It is seldom, indeed, that this crop is cut off, for they are invariably gathered, being ripe, in the early part of September. The upland cranberry found in the British Provinces only requires to be known in order to be appreciated.

The question arises, can it be cultivated and made to subserve the purposes of the agriculturist? Can it be made profitable as a fruit? Why not? If the swamp cranberry has been cultivated and found to be of great value to those who have taken pains to grow

them, why not the upland? The objections which lie against the latter, ten or fifteen years ago applied with equal force against the former. What is now wanted is only a fair trial on the part of those who take any interest in the cultivation of cranberries. These vines must be experimented with and tried; and doubtless Professor Shepherd feels convinced that they will be highly remunerative, or he would not recommend them. There are thousands of acres of land in this country which are dry and parched, and seemingly unfit for the development of vegetation, but if future experience in connection with this variety should prove them to be of value, and their cultivation practicable, we may hope to see these now useless tracts occupied and made of use to the farmer.

Without saying anything further, I call the attention of the reader to Professor Shepherd's letter, upon which he can form his own opinion, and also to the announcement found at the end of this manual, that Mr. Trowbridge has made arrangements to supply this variety of vine to those who may require it.

NEW HAVEN, *Dec.* 28, 1855.

DEAR SIR:—As Mr. Trowbridge is about to forward to you a specimen of the *Oxycoccus Palustris*, or Upland Cranberry, at his request I would respectfully state that these berries are such as I have seen growing

in great quantities in various sections of British America, particularly on the Neepegon coast of Lake Superior.

The plant is much like our common cranberry, but more vigorous, covering the ground entirely with a green mat, while the surface is flaming red with berries, more delicious than anything of the kind I have ever tasted.

I have no doubt the plants may be propagated to great advantage on poor, cold, sterile lands of a northern exposure in all the United States. But they should not be put in marsh or bogs.

Respectfully yours,

FOREST SHEPHERD,

Prof. Ag. Chem., Western Reserve Coll., Ohio.

CORRESPONDENCE.

LETTER I.

REV. B. EASTWOOD:—Your letter, asking questions in regard to planting and raising cranberries, is now before me, and should have had an earlier reply but for my absence from home.

1. The location I chose was *peat swamp*, thickly grown with what are called whortleberry bushes, and other wild shrubs. I cleared the bushes and turf clean to the peat. If any turf is left, rushes and other wild stuff will get in. Planted the vines in the fall. If planted in the spring on peat they would suffer from the drought of summer, and very likely many of them would die. Peat bottom is very wet and muddy in the spring, and bad for setting the vines; while in the fall the surface of the ground is dry, and the process is performed comparatively easy.

2. I flood mine, otherwise they would be very likely to be thrown out of the ground by the frost, particu-

larly the first year, and perhaps the second. A friend of mine cleared a peat swamp the same year I did, but could not flow it in consequence of its location, the whole of his vines were thrown out, and had, of course, to be reset in the spring. Last year, the heavy fall rains flooded it, and they have since done first rate.

I prefer fall planting, particularly on peat, as the flooding in winter settles the soil round the roots; and in spring as soon as the water is let off, say about the middle of April, the vines set at once to growing rapidly; very much faster, and come into bearing sooner on peat bottom than any other.

I set my vines in the fall, say in August and September. The following autumn I only had a bushel or two; the next year, about twelve bushels; and last, the third year, seventy-three bushels of the very finest quality of fruit, and I look for a large increase the next year. It cost me, I think, to clear my swamp (about one acre and a half), including the cost and setting of vines, about three hundred dollars, then the turf that was taken off I consider worth half the money for manure. Respectfully, your ob't serv't,

C. HALL.

[NOTE.—This is one of the most beautiful yards we have seen. Before Mr. Hall appropriated it to the cultivation of cranberries, it was a useless, worthless swamp.

We call the reader's attention to the cost of this yard, and the returns which Mr. Hall had from it from the first to the third year. Setting the third year's yield at three dollars per bushel, which was a very low price indeed for cranberries this fall, it gave him two hundred and nineteen dollars, equalling within eighty-one dollars the original cost of the yard, allowing it to have been three hundred dollars. (See plate No. 10.)

LETTER II.

DEAR SIR:—Yours of the 1st inst. has this moment been received, and in reply I would say:

1. My cranberries are grown on a soil of *peat muck* and loose *beach sand* (not common earth), which I am convinced is the element for cranberries to grow in.

2. I plant my cranberries in hills eighteen inches apart, by making a hole in the ground about three inches in diameter, and of sufficient depth to receive the roots of the plants; then, after placing the vines in their places, I am careful to have them opened, and the soil placed in such a manner so as to spread the hills all around to the sides of the hole that is made to receive them, so that the hills after they are set resemble a saucer placed in the ground and partly

filled with earth. If they are set in a bunch in the middle of the hole, and the soil placed or filled in close around them, it keeps them too close or compact to do well.

3. My cranberries that I depend on are surrounded by wood and brush, so that they are not exposed to winds and are warm; such a situation, I think, is much to be preferred to one that is cold and bleak.

4. I flood my premises at the time the worm makes its appearance, and no other time.

Yours in great haste,

CYRUS CAHOON.

December 3d, 1855.

LETTER III.

DEAR SIR:—In reply to your inquiry regarding my success in cultivating a certain piece of cranberry ground, which I have selected near the sea-shore and by a sandy pond, where the tide had in previous years flooded it with salt water during heavy storms, I would say: I commenced stopping out the water by throwing up dikes; after which I planted a few vines near the pond. The next summer the vines most of

them died, the ground being *too salt* for them to thrive. In two or three years, however, they sprang up and spread their runners in every direction.

In 1851 I commenced carting sand, making as much land in the pond as out, leaving the land on the incline towards it. I then planted the vines three feet apart, in hills, in the spring of the year. The first season I got but little fruit; the second, four bushels; the third, seventeen; and this autumn, from thirty rods of land I gathered seventy-one bushels of cranberries.

Respectfully,

November 28, 1855. A. CROWELL.

LETTER IV.

DEAR SIR:—I have a small piece of cranberry ground near the sea shore, the soil is part *peat* and part *beach sand.* Those vines that were placed in the sandy soil look well; have yielded from one bushel to two and a half per rod the past year. Those in the peat soil look very well, but have not been so fruitful.

Yours truly,

November 27, 1855. JOHN HALL

LETTER V.

DEAR SIR:—I received yours bearing date of 4th inst., asking a few questions in relation to my experience in the "culture of cranberries," which is not very extensive; but have some experience as I have now under cultivation four different lots, one of about three-fourths of an acre; one fine mixed *sand* of a *redish* and *white*, *intermixed* with *quick sand*, which have been set, one-half eighteen, and the other eight months, and have flourished well.

My second lot was set about eighteen months on a redish sand, with stones, mixed with a clay loam; this also is doing well.

My third lot is on a *salt meadow*, *dyked* in, this lot has but a small part been set with vines, as it was found to be too salt, which will kill the vines in midsummer; the meadow is covered with white beach sand where the vines are set, I think this flourishes the best if the salt is sufficiently soaked from the soil. This I consider my best piece, except a lot lately bought; the material to set the vines being coarse beach sand, and sufficiently low that water is not too far from the vines in the driest season.

My opinion is, that the cranberry vine will grow the fastest, and bear the largest and finest fruit on what I call *coarse beach sand*, in low, wet soil; such

places we value the most, as the vines run over the ground so as to cover it, in from two to three years, when set three feet apart, in hills, and will pay from twenty-five to fifty per cent. on all investments in land, where it does not require much expense to remove the land to a suitable distance from the water.

Yours respectfully,

E. CROWELL.

NEW YORK, *December* 7, 1855.

LETTER VI.

DEAR SIR:—In answer to your request for some account of my experience in the production of the cranberry, I will say, that some ten years since I was encouraged (from the success of some of my neighbors in the cultivation of the cranberry), to try the experiment on a small spot of ground, very near the sea-shore, in a hollow, where the water in the winter and spring stood to the depth of a foot in the deepest part. It generally dried away by June. I had previously drained and sowed it down to grass, in ploughing for that purpose, I had discovered some two or three vines which stretched out before the plough to the length of six feet or more, which I thought indicated a favorable location.

In the fall of the year I went to a swamp where vines grew wild, and dug out forty sods, I then dug out holes with a stub hoe, about three feet apart, into which I put these sods of vines, and stamped them in with my feet. The next season the vines grew rapidly, and as they spread, the other grasses diminished till the vines had complete possession of about six rods of ground on one side of the pond or hollow, where the sand from the beach had blown in and raised the ground a little. For the last three or four years there has been produced from one peck to one bushel per rod. The fruit on one side of these vines, very soon after they are out of blossom, rots very much, in some seasons more than one-half of the crop is thus destroyed before maturity. I am unable to account for the decay on one part of the lot, while on the other they come to maturity as sound as cranberries in general.

Three years since I had the whole lot improved and set with vines, they grow very well, and the fruit produced is sound and healthy. The last season was very dry, some of the vines, I fear, are destroyed, the fruit was literally baked on the vines. This spot is some twenty feet above the sea, the water during the winter and spring is held by a bed of blue clay, which lies about three feet below the surface.

In the autumn of 1850 I commenced improving

another swamp for the production of cranberries; this swamp was covered with brush and briers, in the winter it was filled with water to the depth of from one to two feet. My operations were commenced by cutting the brush off even with the ice in the winter, then filling in with common earth (a *sandy loam*) to a level three inches above the water line. In *June following I set my vines in hills*, about two feet apart, they have grown very well, are nearly matted over the ground, and in 1854 I picked about six bushels from one-fourth of an acre. The last season there was a prospect of an increase in the product, a much larger quantity put out on the vines, but the crop was almost entirely destroyed by the worm, which attacked them before they were fully grown, and continued till nearly ripe.

I have continued my operations upon this same swamp till now, I have my whole claim, about two acres, set with vines. I have, in filling in the swamp, used common earth, dead sand from the bank, clay loam and white sand, and in all cases taken the ground whence I took my earth down to nearly level with the swamp and set it with vines. I have to contend with rushes which grow rapidly where I have filled in with bank earth and loam, I mow and rake them off in July. In places where I have followed three or four years, they are fast diminishing, and will soon be over-

come by the vines. On portions of this swamp covered with the white sand the vines grow much more rapidly. I have some which have been planted three years, which are very well matted now over the ground. From my inexperience I have not been sufficiently careful in clearing the ground of wild plants, but am much troubled with a species of low black berry, which I try to exterminate by pulling it up by hand.

I would recommend to every beginner to be very careful to clear the ground of all noxious roots and plants; also in the selection of vines, *and set such only as are known to bear fruit.*

On the whole, I think my experiments (though vines grow well and look promising) have not been attended with the success of some of my favored neighbors. I think my location is not the best, but am not discouraged. Respectfully,

JOSEPH HALL.

LETTER VII.

DEAR SIR:—Agreeable to your request I proceed to give my opinion, which is formed from my own personal experience, on the best mode of the culture

of cranberries. *Coarse light sandy soil* is best adapted to the growth of cranberries. The ground should be low and moist. The best mode for planting is by transplanting the vines. Sometimes I set them in drills, sometimes in sods, say twelve inches apart. The best time for transplanting is in October or November. I also think that great advantage is derived from flooding—although I have no means of flooding mine, except the rains, but when they are flooded I am almost certain of a crop. It likewise keeps the vine from frost during the winter, and kills the many insects that inhabit these places. I think they should be drained about the first of May. It usually takes from four to six years for the vines to get properly run together—they then yield the largest cranberries. The yield per rod, as average, is from one to three bushels. Very respectfully yours,

December 8th, 1855. HIRAM HALL.

LETTER VIII.

DEAR SIR:—In reply to your inquiry concerning the cultivation of cranberries, I will say, that three years ago I set out in May about one-half acre with

cranberry vines, on a piece of swamp land, bordering on the meadow. It was covered with brakes, bayberry and whortleberry bushes. I took off the brush and top sod, removing all the roots, and with them built a dyke around the piece to keep off the tide water. Part of this swamp was a soft quagmire, the other a knoll about three feet high. This knoll I levelled off by wheeling the soil into the bottom. The *soil* was a *hard black sand.* I then set out the vines in the sods that I found growing along by the edge of this meadow, about eighteen inches apart. The bottom, where I filled in sand, grew up to rushes, so as to obstruct the spreading of the vines. On the upper part the soil being hard and surrounded by *cold spring water*, I think will not prove a favorable location for the growth of cranberries.

Respectfully yours,

December 10*th,* 1855. HOWES CHAPMAN.

LETTER IX.

DEAR SIR:—In the year 1813, by my father's request, I planted some two rods of cranberry vines by the side of Scargo Lake, or pond, which I took from a swamp where they grow in a natural state. They

flourished well for some two years and bore some berries. Then being neglected, the sand blew over them and they soon became extinct.

In 1840, cranberries bringing a very high price, my attention was again called to their cultivation, I concluded to go to work on the same spot and prepare the ground, which I did by removing the sand and levelling the ground of about fifteen rods, within six inches of water. I then planted the vines, *without the sod*, in hills, about two feet apart, in the spring of the year, they grew well, bearing every year but one, when they were overflowed, the water remaining on them until the *season* for *blooming* was past, as the pond had then no outlet, but now has.

I have now three-fourths of an acre set with vines, The soil is *coarse sand*, and lies on the westerly side of said pond. I have never received any injury from frost, spring nor fall, and have always delayed gathering until about the 10th of October, when the fruit would be ripe. I have kept no record of the number of bushels I have gathered, but have taken two and a half bushels from one rod in some years. When I first commenced, I made the ground level, but now I leave it in the form of an inclined plane; my reason for this alteration is, the land being high, and too much cold water oozing from the ground, which I think is a damage that causes the moss to grow and

root out the vines very soon; all they want is the ground moist and loose.

Yours respectfully,

December 13*th*, 1855. THOS. HALL.

LETTER X.

DEAR SIR:—In the fall of 1852 I bought a piece of low springy land adjoining a salt meadow, then well covered with the rush grass. I put on from the adjoining embankment about one foot of sand; in taking which I widened my cranberry ground about two rods. I set out my vines the same fall in sods eighteen inches apart.

When spring came I found my sods or vines all thrown out of the ground by the frost, and appearing as though they had never been planted. I then again replanted the vines hill by hill. The second year the rush made its appearance again on that part of the ground filled in, and has increased to this time, threatening destruction to everything that comes in its way I consider this piece of ground a failure, except the strip two rods wide adjoining the embankment or upland.

My first mistake was, selecting a cold, springy piece

of land, and my next was, planting the vines in the fall on a piece of ground that could not be protected from the frost by flowing, by which means the vines were stunted and their vigor destroyed so that they could not compete with the surrounding grass, and were, therefore, overpowered.

I have one other piece of cranberry ground adjoining a large pond, warm and sandy. I set out the vines on this piece in May, and got two bushels of cranberries to an acre the same year. This piece having been planted but eighteen months, promises finely, but I do not expect much yield till the third year. This piece cost me, when completed, at the rate of $750 per acre. It is made on the poorest sandy soil I could get, and such I would recommend to the cranberry grower, as I never saw a soil so poor that cranberry vines would not grow in it. My idea is, the poorer the soil the less trouble I shall have to keep down other grass, no fear of the vines, they will grow where no grass will.

Yours,

December 11*th*, 1855. J. C. Howes.

LETTER XI.

Dear Sir:—I received yours of the 8th instant, and will proceed to answer your questions:

"On what location do you prefer to plant vines?" I consider them rather of a marine plant, and therefore should prefer to plant as near salt water as possible, and not have them *overflowed* with *salt water*.

"What soil do you prefer?" A wet, sandy soil, the whiter the sand the better. My reasons are, there will be less grass grow to choke the cranberry vine, and the berry will grow larger.

"What is your method of setting out, in hills or drills?" I have set them in hills and in drills, and am not able to decide which flourishes best.

"Do you flood?" I do, where it is practicable it protects the vine from frost.

"Do you consider it a profitable undertaking?" I do, if any one has a proper place. I have raised three bushels of cranberries on one rod.

Respectfully, J. FREMAN.

ORLEANS, *December* 10*th*, 1855.

The following instructions were written by Mr. Bates, to guide those who intended to cultivate the cranberry on uplands. We subjoin it for the purpose of giving the intending cultivator the advantage of this method:—

"1st. Select a situation for your cranberry field on a clay soil, on such as is not liable to bake, or on a dark loam soil, or on all moist soils where there is a mixture of sand, mostly of reclaimed lands; such as can be made moderately dry, are well adapted to grow the cranberry. In fact most all soil that is natural to grow the potatoe, is well adapted to grow the cranberry, (*yet the first mentioned soil would be preferred*). I think there are portions on most of the farms situated in the Middle States, and their vicinity, that are well adapted to grow the cranberry, and I should propose to all desirous of commencing the business, to put their plants on different parts of their soil, and by so doing the better soils may be ascertained. As far as I have ascertained, there are three varieties of cranberry, viz:—the Bugle, the Cherry, and the Bell—I have never known of any other variety of the berry that would naturalize to dry soil except the Bugle cranberry; this species of the berry grows much in the form of an egg—it is inclined to grow in the wild state on the borders of cranberry bogs, spreading its way to upland soil, this species is much larger than the others in its wild state. Persons engaging in the cultivation of the article should commence with the last mentioned species, and by commencing with those that have been cultivated and naturalized to a dry soil, they will much sooner accomplish their object, and

with much less trouble and expense, as the plants multiply and increase abundantly. Persons commencing with one or two thousand will be able to obtain plants of their own raising sufficient to transplant acres in two or three years.

"2d. Prepare your soil the same as for sowing grain, by plowing, harrowing, and making your soil even—then mark it out in drills, eighteen or twenty inches apart, putting the plants in the drills five or six inches apart—hoe them slightly at first, till the roots become clinched, and afterwards no other cultivation is needed. The plants may be expected to run together and cover the whole soil in two or three years. The cranberry grown by cultivation usually yields from 150 to 400 bushels per acre; its fruit is two or three times as large as the wild fruit, and of beautiful flavor; it readily keeps sound from the harvest time of it to the time of harvest again."—*Maine Farmer.*

LETTER XII.

DEAR SIR:—I have tried the experiment of raising cranberries on the uplands. In the fall of 1852 I set out vines on about one-quarter of an acre of ground, which was on a very high hill, the soil was a *gravelly*

loam. The vines lived and bore a few cranberries. The soil, I think, was rather too rich, having been manured the year previous; in consequence of this, the grass grew up and choked the vines. Besides this, the summer following the one in which I set my vines we had a severe drought, which dried and baked the ground to the great injury of the vines. I believe that if I had set out the vines in the *spring*, and *hoed them two or three times* during the season, they would have done much better and yielded a larger crop.

From the experiments which I have made in upland cultivation of the cranberry, I believe that the vine can be successfully cultivated on the upland; providing the vines are well cultivated. I design setting out another patch, on the cultivation of which I intend to apply the knowledge I have gained from my former experiment. Respectfully,

JAMES HOWES.

LETTER XIII.

DEAR SIR:—Yours to Thomas Lathrop, Esq., of the 8th inst, came duly to hand, and he has requested me to answer your questions to him.

1. As to the location, "before the growing of cran-

berries there," he would state that it was a swamp varying from two to five feet in depth of water and springy peat. Beach sand (the only soil we have here) was carried on so as to raise the swamp a few inches above the ordinary height of the water in July, and the vines were set in said sand.

2. As to the kinds of soil, we have but one kind in this town, and that is *pure beach sand;* hence we can "prefer" no other if we would.

3. Mr. Lathrop is unable to "determine" the cost of preparing the ground and setting his vines. His work has been expensive, as it was preparatory to his future doings. Much of it has been in roads, beach grassing hills, &c. He will bring into vines about seventy acres at much less cost than his four or five of cranberry ground now in good condition.

4. As to "flooding vines," nature does all that is or can be done in this respect. The water in all our back swamps (and some of these contain several hundred acres) is upon the same level. How can you make it otherwise with beach sand through which the water must filtrate so readily? Vines are now in most places one foot or more from (or above) the water.

5. The "yield per acre" cannot be definitely determined, as his vines are not regarded as yet fully in a bearing condition. His lot first planted of two or three acres, (he has never measured it) about the sixth

year yielded seventy barrels—the next year fifteen barrels—and the next, or the last year, eighty barrels. The springs were very low the last year, and the berries suffered, otherwise I think he would have doubled the quantity. He has kept most of them, and has had offered $16 per barrel, in New York. You will agree with me in supposing that low as it is, $1280 is not a small income from so small a field.

In Mr. Lathrop's absence I make these statements. Perhaps hereafter he will favor you with other and more interesting. I have, however, been familiar with all his management, and am personally interested in the cranberry culture. I have recently bought one-sixth of a cranberry swamp, where the company have built a house, and employed a man by the year in bringing it to cranberry vines. I also own another lot, where at much less expense I hope to bring a large lot into cranberry land.

There are companies, like that with which I am connected, formed, and they have brought swamp into vines at a cost from $200 to $400 per acre.

Yours truly. O. MYRICK.

PROVINCETOWN, *December 12th*, 1855

The following letter, cut from the *Journal of Commerce*, which was communicated by Mr. Bagley, will be

both instructive and interesting, as it very forcibly illustrates some of the principles laid down in this "Manual." We commend it to the reader, believing that useful hints may be gathered from it, and applied on some lands, to the successful cultivation of the cranberry:

CRANBERRIES—THEIR CULTIVATION.

"I chose for the experiment a maple swamp on high land, containing peat (95-100 vegetable matter) from one to ten feet deep. We commenced draining it in June, 1849, and having set a few vines for trial, we proceeded to cultivate corn and potatoes; but finding, after two or three years, that we were obliged to keep it too dry for cranberries, we concluded to set it all with vines, in order to flow it, which would injure other crops, and I have now nine acres of vines, mostly set within about three years. My mode of cultivation is as follows, viz.: we clear up the swamp by taking off the top, roots and all, to the depth of one foot or more (which makes excellent manure for the adjoining upland), and having drained it by ditching, mark out the ground with the corner of the hoe, and set out the vines, which we have obtained from the common wild bogs, wherever we could get them; and having dropped five or six vines in the hoe mark, stamp them in with the heel, and haul on some dirt with the hoe,

covering the vines about two-thirds up with dirt. This operation may be performed at any time of the year, when the ground is not frozen, if not too dry. It is then necessary to keep them clear of grass and weeds.

"I have heretofore thought that grass would not hurt them after the vines got well spread; but I am convinced by this year's experience that they cannot be kept too clean. I have one acre that was set four years ago. About three-quarters of the acre has been covered with rushes, and is now; while the other quarter at one end of the lot has been kept clean. I have the past week measured off one square rod of the clean vines, and gathered two-and-a-half bushels of berries from the rod, which is no more than an average of the quarter acre, which will be testified to by the gentleman who assisted me in picking them, as also by several other gentlemen who have seen them since, as the other berries yet remain on the vines. The other three-quarters acre covered with grass, has been mostly picked; and although the vines are as large, I shall not get twenty-five bushels of berries from the three-quarters acre—the one yielding at the rate of four hundred bushels per acre, the other about thirty, showing the great advantage of keeping the vines clean.

"My meadow would probably have yielded one hundred barrels more this year, had it been kept clean. I

pick my berries by hand, as I am convinced there is no advantage in raking them.

"We have to pick after the rake, and I do not think the vines will bear as well the next year. I flow my meadow about two feet deep in the month of December, and keep it on until the middle of May, when I draw it down, leaving about two inches of water on the surface under the vines, as long as there is any fear of the frosts; then keep it as near the top of the ground as I can. The rake also bruises the berry, and causes it to rot. I find the cranberry will begin to bear well from three to five years after setting. The cost of cultivation I shall put in round numbers as follows, viz.: Cost of land, $12 per acre; cleaning, $100; vines and setting, $50; cost of cultivation, $10 per year—for four years, $40: total, $202. But the top that we take off is worth $20 for manure, leaving $182. Interest for four years, makes $229.34 per acre. My four-year-old vines that are clear from grass (say half an acre more or less), will average three hundred bushels per acre. I have been offered $2.50 per bushel above the cost of picking, which gives one a clear profit over and above the cost of land and cultivation on the half acre, of $260.33. I do not gather my berries until they are ripe; for if picked while green, they are bitter and unfit for use; although by spreading they may become quite red, still they are not worth half price.

"They may be spread on floors, or put in good barrels and piled on the north side of a building, until cold weather, when they should be put under cover, in a cool cellar, or building, where it will not freeze hard.

"The berry will not be as red as it would be if spread, but I think it will keep better. For my experiment with the cranberry on upland, I selected a piece of new land where the wood had just been cut off. I had it dug over with the grub hoe in the fall of 1849, taking out the loose stones and roots; and having prepared four square rods, I had it drilled eighteen inches apart, filling the drills with peat mud. I took the vines from a wild wet bog in the month of November, and set them about one foot apart in the drills. This is all that has been done for them except to keep them clear from weeds for two years.

"In the fall of 1853, I picked from the lot two bushels and three pecks of berries. In the summer of 1854, they bade fair to yield a much better crop, but were cut off by the hot and dry weather in August, and I did not get quite two bushels.

"Last winter the vines were killed, probably by the extreme cold weather, but sprang up again from the roots and bloomed very fully—but so late in the season that they have been much affected by the drought, and I shall not get more than one-and-a-half bushel. The

land and labor, with interest for four years, cost about $1.25 per rod. This, as will be seen, gives a good profit; but the cranberry crop is uncertain, unless in situations where they can be flowed in winter and kept moist.

"VARIETIES.—The folly of asserting that there is but one variety of the cranberry, can only be equalled by asserting that there is but one variety of the apple, the pear, or the potato—the former maintaining their peculiar forms, colors, and times of ripening, as distinctly as either of the latter; the large white cranberry, on which there is nothing but a faint blush (some of them being entirely white), growing side by side with the small and entirely red berry, that is never one-quarter as large. So with many other kinds. Indeed, they vary in form much more than many distinct varieties of the apple.

"I have a large variety on my meadow, by getting the vines from all the wild bogs in the vicinity. I have several kinds growing in separate beds, and have marked several other kinds, which I intend to set by themselves in the spring. I have twenty varieties put up for "The American Institute Fair."—EDMUND BAGLEY, in *Journal of Commerce.*

[NOTE.—Some producers are not prepared to admit that there are more than two or three varieties of the

cranberry, but we believe that more extended acquaintance with this fruit will set them at a higher number.] SEPTIMUS.

LETTER XIV.

DEAR SIR.—Having had some experience in the cultivation of the cranberry, I find that the soil best adapted to the growth of the cranberry is *beach sand*, or light sandy earth.

In our selection of a plat we should be particular in making use of one that can be flooded from November to the first of June, which prevents the insects from destroying the blossom or cranberry. To do this, level the surface and dyke the land where it does not communicate with a pond.

The best time for transplanting the vine is the spring months, not removing the earth from the roots.

December 11*th*, 1855. ABIJAH HOWES.

VINES, WHERE TO BE HAD.

From what has been stated in the previous parts of this manual, some readers may have determined upon attempting the cultivation of the cranberry, and are desirous of obtaining vines of the quality described—vines which have been *naturalized* by cultivation. I can recommend all such inquirers to William Crowell, Esq., of No. 26 Coenties Slip, New York, N. Y., for vines with which to set out a patch or yard. His vines can be relied upon as being of the best quality. Letters addressed to him or the author of this work, through the publishers, will be promptly attended to.

The vines which Mr. Crowell has for sale are transported from his yard on Cape Cod to New York, so that orders can be filled as soon as they are received. Good vines, I mean those which have been *improved by cultivation*, can be supplied at from $7 to $10 per thousand. It will be found that plants of this description are cheaper in the end than those which are procured wild from the bog, though the latter are furnished at a much lower rate. It will require some years to bring the *wild vine* to that state of perfection which belongs to the cultivated one. And the probability is, that many vines obtained wild from the swamp are barren; it will therefore be cheaper to purchase those the qualities of which are known and proved.

APPENDIX

TO THE

CRANBERRY MANUAL.

FURNISHED BY THE HON. SIMON BROWN, EDITOR OF THE "NEW ENGLAND FARMER," FROM THE TRANSACTIONS OF THE MIDDLESEX COUNTY AGRICULTURAL SOCIETY, MASSACHUSETTS, 1855.

I ACKNOWLEDGE my obligations to the Hon. Simon Brown, Editor of the *New England Farmer* for the material which constitutes the appendix to this treatise.

I commend what is here embodied to the careful attention of the reader, believing that he will find the intelligent statements made on the culture of cranberries to be worthy of his notice. They are highly practical, and if carried out on the lands distinctly named herein, they will be followed with some degree of success. I would call the reader's attention more especially to the statistics which are given, as they so clearly show that what has been said on this fruit is not an exaggeration of its value to the farmer.

The following are taken from the Report of the Middlesex County (Mass.) Agricultural Society for 1855.

MR. ADDISON FLINT'S METHOD OF CRANBERRY CULTIVATION, WITH STATISTICS.

To the Committee on Cranberries.

GENTLEMEN:—I see in your advertisement of premiums to be distributed, one for Cranberries, which I hope to obtain; and I refer you, for a description of the manner in which I proceeded to raise them, to the Agriculture of Massachusetts, as shown in the returns of the Agricultural Societies of 1853, pp. 245, as follows:—

MR. FLINT'S STATEMENT.—In the autumn of 1843, I built a dam and flowed the swamp from that time till August, 1846; then let off the water.

The following October, burnt over the swamp and set the vines. The vines were cut up with a sharp hoe or shovel, and set in hills, three and one-half feet apart; the bunches about the size of a quart measure.

In raising from the seed, I planted in October, 1846, about half an acre; crushing each berry between the thumb and finger, and placing it just under the mud, single berries in a hill, three and a half feet apart. Also, sowed broadcast a number of bushels of refuse cranberries the following spring. Very few vines appeared from them for two or three years; no berries till 1852, then very small; in 1853, good size, in quantity worth picking.

My practice has been to stop the water in October,

and keep it on till May, or until the weather is warm enough to start vegetation—then lower it down to the top of the vines, and keep it on them until I think the spring frosts are over, then let the vines be fairly out of water until the berries are grown—say from 10th to 15th August—then draw it off for ripening and picking.

We found three or four small beds of native vines on the swamp, after we let off the water to set the vines, and a few very fine berries; there are now probably a dozen beds that bear berries.

In 1850, we picked seventeen bushels of berries on the swamp; in 1851, twenty-eight bushels; in 1852, ninety-three bushels; in 1853, we estimated them at one hundred and fifty bushels.

In 1852, the native vines produced by estimation, before selling, forty bushels; the transplanted vines, sixty bushels; the increase this year is principally from the transplanted vines.

I now give you a statement of the proceeds:

1850,	picked	17	bushels,	sold	15	1½	bushels for	$26 20
1851,	"	28	"	"	26		" "	70 00
1852,	"	93	"	"	93		" "	300 00
1853,	"	52	bbls.,	"	52	bbls.	"	380 00
1854,	"	47	"	"	47		" "	305 00
1855,	"	50	" by estimation, probable value					500 00
								——$1581 00

I learn from the first Annual Report of the Secretary of the Board of Agriculture, that the cost of preparing

land and setting vines is $1,50 to $1,87½ per rod, which is very extravagant, compared with the manner I have pursued:—

The cost of building my dam by contract .	$20 00	
Ox labor, furnished by myself, estimated .	5 00	
Setting vines on about an acre . . .	25 00	
		$50 00
The cost of stopping and letting off water, and taking care of the same since 1846, yearly, $10,00	$90 00	
Reckoning the cranberries, for the past six years, at six hundred bushels, and the cost of picking and marketing the same at 75 cents per bushel	450 00	
		$540 00
Net profit on $50, expended nine years . .		$1041 20
Yearly income on $50		115 67

Respectfully yours,

North Reading, Sept. 25, 1855. ADDISON FLINT.

[NOTE.—Since the above statement was made, the Secretary has learned from Mr. Flint that he had just fifty barrels of cranberries as his crop of 1855, which he sold for *thirteen dollars* a barrel, delivered at the depot two miles from his house, making the pretty sum of *six hundred and fifty dollars* as the product of two acres of what was quite recently an almost worthless bog meadow. Mr. Flint also states, that in looking about he notices a good many tracts of land apparently as good for the cranberry crop as his, and that some of the pieces might much more readily be flowed and re claimed than his own.]

MR. AUGUSTUS H. LELAND'S METHOD OF CRANBERRY CULTURE.

GENTLEMEN:—The piece of cranberry meadow to which I invite your attention, contains about three-quarters of an acre. The mud and peat is deep, and the plat rests on a light layer of sand, and under that, as near as I could ascertain, at one point a clayey gravel. There were four or more kinds of grass upon this piece which had been cut off yearly ever since my rememberance.

The first of these grasses is called *carex filiformis*—a kind of sedge-grass, which passes by the name of water-grass—grew upon the greater portion of this piece. Another kind is the *carex stricta*, a kind of sedge-grass called hassock-grass, and also a narrow-leaved sword-grass. The third kind, *carex locustris*, a kind of sedge-grass with broad leaf, and is called broad-leaved sword-grass. The fourth kind is *scripus eriophorum*, the true name being wool-grass, called the broad-leaved sword-grass and also broad-grass. These grasses I shall allude to in my experience which will be annexed to this statement.

In the autumn of the year 1838, I think, with a cast-iron shovel ground sharp and put in good cutting order, I removed squares or sods of the turf from the ground. one side of these squares nearly correspond

ing in length to the width of the shovel, the depth of the hole being from four to five inches. I then from beds of vines cut sods of vines corresponding in size and in depth to that which I had removed, which I placed in the holes already made, and with the feet trod or pressed them firmly into the hole, that they might not be disturbed by the action of the ice or water, during the winter or spring. The distance of these sods, or hills, one from another, was from three and a half to four feet. As some of these vines which I transplanted had grown from fifteen to eighteen inches in length and lay nearly level with the ground, care was taken to raise the vines and place the shovel under so as not to cut off the vines, and also to get a sod of the proper size, otherwise the vines would be cut off and greatly injured. As far as I have seen, vines which are of much length, and which lay under water during the winter and spring, will, if let alone, naturally lean to the north-east, (for the same reason that fruit trees lean that way), and as I rake my vines all one way, that is, I draw the rake from the south-west to the north-east, so I placed those sods of vines which did not stand erect so that they would lean to the north-east.

Every year since the year 1840, these vines were eaten up as regularly as the year came round by a worm, called in this vicinity the cranberry worm.

This worm may be the same, or at least a species of the same worm, which operated the last of June on the apple tree; its appearance to the eye is the same, its operations the same, and it has the same faculty of jerking itself back as the apple-tree worm. Some seasons they seemed to threaten total annihilation, the vines presenting to the eye the same appearance that an orchard does when its foliage has been eaten by the canker worm. To destroy this worm, the vines were kept under water from spring until the first of July, 1852. This destroyed all the worms I believe, as I have not seen one since. When the water was taken off the vines grew vigorously, forming the blossom bud for the present year, and the result is as handsome a lot of berries as ever was seen.

Nearly every year I have cut the grass near the first of July, thereby giving the plants the air, sun, and light.

One side of this piece borders upon a small brook, which, previous to my cultivating the vine, in a dry time would become dry. In this brook I formed a dam in two places; these dams, most of the time in a season like this, keep the meadow wet, and the water is forced back among the vines, the object of which is to protect them from frosts, which usually occur in all the summer months in low lands.

In addition to the above statement, I would like to

give my experience in the cultivation of the cranberry; I would do it with the hope that by my efforts and experience, whether successful or otherwise, the cultivators of this fruit may be encouraged and emboldened to persevere in the cultivation of this delicious fruit, which promises the cultivator so great a reward.

It is more than twenty years since I entered upon the cultivation of the vine with high hopes, believing that the cranberry was a hard thing to exterminate, that it would destroy grass in all situations and in all soils, and cause even hassocks to disappear. But after a trial and many years of observation, I find the cranberry a hard plant to destroy, except with the plough, and that it will not root out and destroy all grasses in all situations and soils. I find that in some soils the vine will not drive out certain kinds of grasses, when in other soils it may succeed. Take for instance that kind of sedge-grass which we call hassock-grass, this upon banks of streams, and in our swails where it is more or less irrigated, roots with such strong hold and throws up the blades of grass so thickly that there is no room for the vine in a soil less rich, and the vine will in all probability succeed.

Take, for instance, the *osmunda spectabilis*, called in this vicinity buckthorn, and is known to botanists by the name of flowering fern. This grows in the form of a tree, its slender stem supporting a large top with

a large leaf, overshadowing all around, and shutting out the sun, light and air so much that the vine cannot grow. On one occasion I set out vines among the flowering fern and in about three or four years the sods of vines could not be found. Close by the side of this was a large bed of vines, covering nearly a quarter of an acre of ground, (except four or five little places of a few yards in each), which was flowering fern or buckthorn. In order that the ground might be comparatively covered with vines, I cut up and carted this buckthorn to the upland, and set sods of vines in its place, expecting that they would some day take the place of the buckthorn. In this I have not been disappointed, for these plats are loaded with the largest fruit; so thickly do the berries lay this day, that in some places they would, if collected and laid upon a level place, completely cover the ground. But this quarter of an acre of vines in a few years was gone, except a few stray runners; the flowering fern had taken their place, and the plats I set out are only left to tell where the original bed of vines stood. Now I do not suppose that in every situation and kind of soil that this fern would supplant the place of the vine—although in this case it did. I have several small plats of ground besides, one containing some fifty square rods, the turf containing the roots of the buckthorn. I cut in strips about fifteen inches wide, and set it up edge-wise to dry. These were burnt when dry and the

ashes carried to the compost heap, as they are not needed on this soil.

These plats were set with sods, with most excellent success—one-half rod gave me this season one bushel of berries, which is at the rate of at least three hundred and twenty bushels to the acre. These experiments show clearly that the plant cannot be set in this grass with any prospect of success. There is another kind of grass called polly pod, also, small brake, *Dryopteris thelypleris,* which, as far as I have seen where it covers the ground, casts so much shade that the vine cannot succeed in it. It is more easily pulled up than the buckthorn; and when dried and burned, vines may be set with good results.

There is another kind called by some the broad-leaved sword-grass, and by others broad-grass, and by botanists *wool-grass, scirpus eriophorum.* It grows in round plats or clumps, varying in diameter from three to twelve feet. In the piece I presented to you for examination there are several plats of this grass, which show that the vine cannot take root in it.

Upon this same piece of ground is another kind of grass covering some two rods called *carex lacustris,* a coarse kind of sedge-grass; its general appearance does not differ from wool-grass, the blades of which are not so thickly set in the soil as the wool-grass, yet sufficiently so as that the vine succeeds with difficulty.

The other kind of grass in this piece is called *carex filiformis*, a kind of sedge-grass, and water-grass. This grows in wet places, throwing a less number of blades which cast less shade, and when mown there is less stubble than any other kind of grass I have noticed. On the whole, the vines have flourished quite as well in this as in any other grass, although my success has been equally good on one piece of hassock and sedge-grass.

On another plat which was covered with hassocks I set sods between them which have nearly disappeared, the hassocks standing alone in their glory. I would recommend that all hassocks be removed before setting out vines. And also, let no man set out rose-bushes with his vines.

I would suggest that when the thermometer, the direction of the wind, &c., denote a frost, if there be a stream of water which the cultivator can command, that a dam be built and so constructed that the water may be thrown back during a cold spell, and when it is past let the water run again. If a stream of water of sufficient size does not flow—reservoirs of water may in places be laid up for use in a frosty time.

As far as my observation extends, there are but few soils in which the cranberry will not flourish. When they will not, the character of the soil may be changed by carting on gravel, loam or sand, at any time in winter; if necessary, spread it upon the ice from one

to three inches in depth; the vines will find their way through and grow with new life and vigor.

I have in two instances made trial of burning the vines because they were old and did not seem to bear fruit. These pieces contained together some ten to fifteen rods.

I can see no good reason for burning vines except to destroy the cranberry worm when it cannot be done by flowing in summer. If burning is resorted to, great care must be taken not to burn in too dry a time. If there be but few vines and other matter to burn, it would be necessary to select a time more dry than if there were a great body of vines—as they would burn almost any time when once on fire.

Meadows for cranberries must not be drained.

Above is my statement, and also my experience, and I rest my claim for the premium on three reasons.

1. The successful experiment in transplanting.

2. In establishing the principle that flowing until the first of July will effectually destroy the cranberry worm, so destructive to the vine.

And lastly, yet by no means the least, my experience and observation of more than twenty years in the cultivation of the vine in the different grasses, which may, by being given to the public, save those who cultivate this fruit, much precious time as well as large sums of money. AUGUSTUS H. LELAND.

Sherborn, September 13, 1853.

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